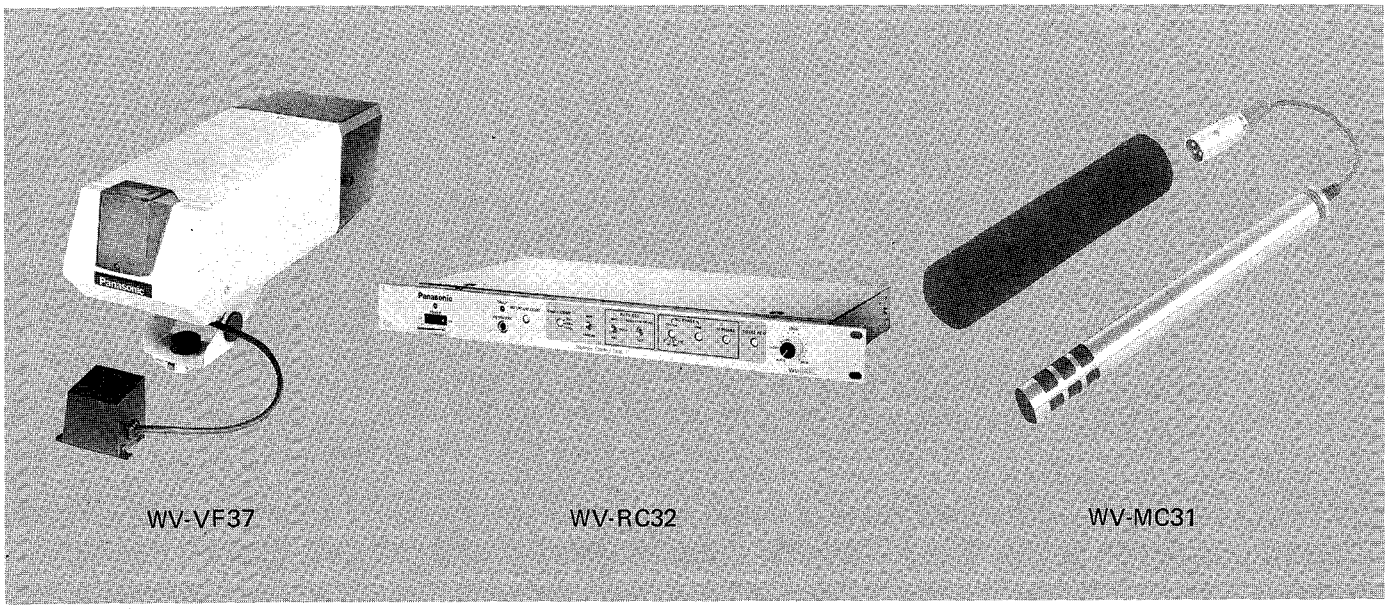
ORDER NO. VKD8401810C8

Service Manual

Colour Video Camera

WV-VF37, WV-RC32 and WV-MC31 for WV-555 Series



CONTENTS

SPECIFICATIONS 1
MAJOR OPERATING CONTROLS ..... 2 ~ 5
CIRCUIT DESCRIPTION ..... 6 ~ 12
ADJUSTMENT PROCEDURES ..... 13 ~ 23
5" Viewfinder WV-VF37 ..... 13 ~ 16
Remote Control Unit WV-RC32 ..... 17 ~ 23
BLOCK DIAGRAM ..... 24 ~ 29
5" Viewfinder WV-VF37 ..... 24 ~ 26
Remote Control Unit WV-RC32 ..... 27 ~ 29
SCHEMATIC DIAGRAM ..... 30 ~ 41
5" Viewfinder WV-VF37 ..... 30 ~ 35
Remote Control Unit WV-RC32 ..... 36 ~ 41
EXPRODED VIEW and PACKAGING ..... 42 ~ 47
5" View Finder WV-VF37 ..... 42 ~ 44
Remote Control Unit WV-RC32 ..... 45, 46
Microphone WV-MC31 47
REPLACEMENT PARTS LIST ..... 48 ~ 56

Panasonic

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

SPECIFICATIONS

- 5" Electronic Viewfinder WV-VF37

Visual Size (underscan) :	4.5" actual visual size, measured diagonally
Power Source :	Supplied from camera head
Horizontal Resolution :	500 lines at center
Switches :	Tally ON/OFF, Peaking ON/OFF
Controls :	Contrast, Brightness
Display :	Luminance, R–G or B–G signal (Selectable at camera head)
Indicator :	Level Indicator Tally Indicator/Auto Warning Indicator Tally Lamp
Dimensions :	6-1/8" (W) x 7" (H) x 14-1/4" (D) 156 (W) x 178 (H) x 362 (D) mm
Weight :	2.7 kg

- Remote Control Unit WV-RC32

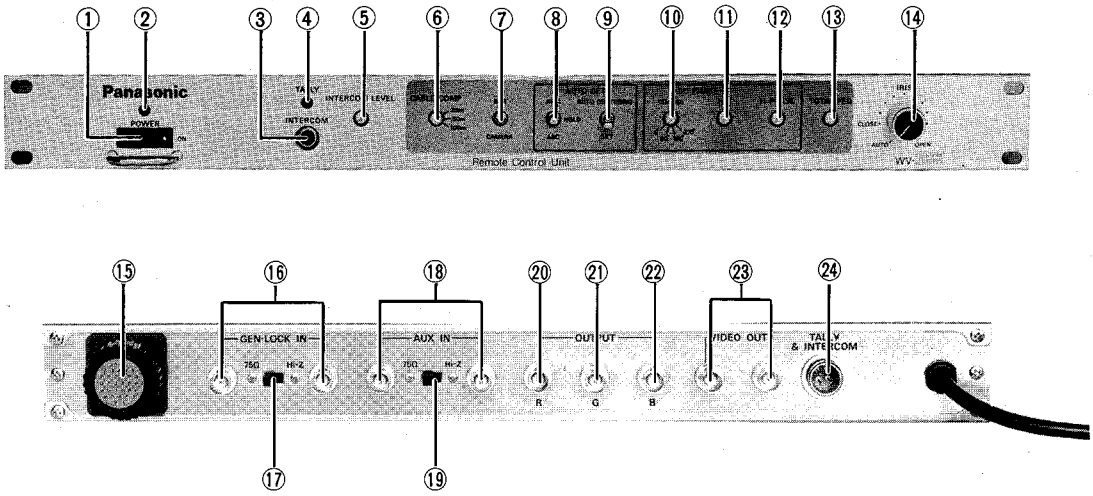
Power Source :	WV-RC32/A, WV-RC32/B : 240V AC 50Hz WV-RC32/C, WV-RC32/G : 220V AC 50Hz
Power Supply :	12V DC 2.2A for camera head
Video Input :	1.0Vp-p PAL composite/75 ohms (32P RCU connector)
Video Output :	1.0Vp-p PAL composite/75 ohms x 2 (BNC connector)
Red Video Output :	Non-composite/75 ohms x 1 (BNC connector)
Green Video Output :	Non-composite/75 ohms x 1 (BNC connector)
Blue Video Output :	Non-composite/75 ohms x 1 (BNC connector)
Gen-Lock Input :	1.0Vp-p PAL composite or black burst signal/75 ohms or Hi-Z looping through x 1 (BNC connectors)
Subcarrier Phase for Gen-Lock :	Adjustable more than 360°
Horizontal Phase for Gen-Lock :	Adjustable from -0.1 μsec to +3.5 μsec
Aux (Line View) Input :	1.0Vp-p PAL composite/75 ohms or Hi-Z looping through x 1 (BNC connectors)
Maximum Studio Cable Length :	100 m with cable compensator
Tally & Intercom :	4 pin connector
Switches :	Power ON/OFF, Color Bar/Camera Selection, Auto White/Auto Black Set, Auto Centering Set, Cable Compensation
Controls :	Total Pedestal, Subcarrier Coarse and Fine Phase, Horizontal Phase, Intercom Level, Iris Auto/Manual-Iris Level
Ambient Operating Temperature :	−10°C ~ +45°C
Ambient Operating Humidity :	Less than 90%
Dimensions :	480 (W) x 44 (H) x 225 (D) mm
Weight :	3.3 kg

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

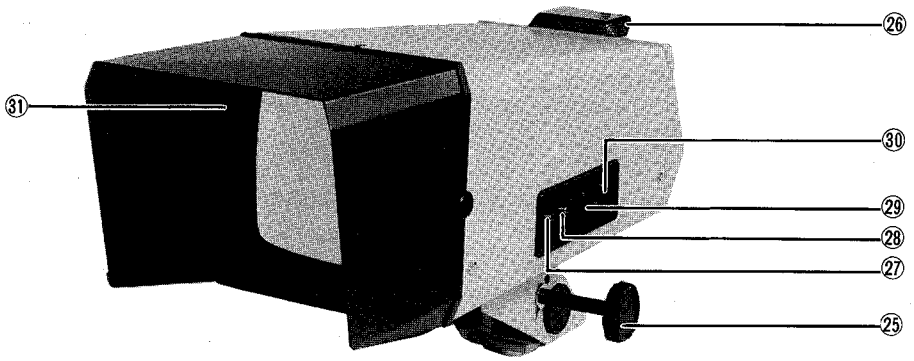
MAJOR OPERATING CONTROLS

Studio Camera System/Main Optional Accessories

- **Remote Control Unit (RCU) WV-RC32**



- **5" Electronic Viewfinder WV-VF37**



Optional Remote Control Unit (RCU) WV-RC32

1 Power ON/OFF Switch (POWER)
This switch activates power for the RCU.

2 Power Indicator
This indicator comes on whenever the unit is operated.

3 Intercom Jack (INTERCOM)
This is used for intercommunication between camera operator and RCU operator in system operation with special effects generator.

4 Tally/Auto Warning Indicator (TALLY)
Tally Function
When RCU is used in conjunction with special effects generator, the tally indicators on the viewfinder and RCU indicate to the camera operator, RCU operator and other people that this camera system is actually shooting the scene.

Auto Warning Indicator function
This indicator blinks while the white balance, black balance or centering is being automatically set and it goes off when the white balance, black balance or centering setting is completed. This indicator remains on when the automatic white balance, black balance or centering is set improperly. In this case, reset the previous automatic operation.

Caution: When the camera is connected with the special effects generator (SEG) through the remote control unit (RCU) of the camera and the tally/intercom cable is connected between SEG and RCU, the camera selected on program output bus of SEG can not identify whether the Auto Warning function or tally function.
Whenever the white balance, black balance or centering is being set automatically, observe preview output picture from SEG and select the camera on preview output bus, and do not select the camera on program output bus.

5 Intercom Level Control (INTERCOM LEVEL)
Turn this control to have optimum sound level for the headset connecting to the intercom jack 3.

6 Cable Length Compensation Switch (CABLE COMP)
This switch is used for 32-pin studio cable compensation between the camera head and RCU as;
20m(60ft) : Cable length less than 20m (60ft)
50m(150ft) : Cable length 20 - 50m(60-150ft)
100m(300ft) : Cable length 50 - 100 m (150 - 300ft)

7 Color Bar/Camera Selection Switch (BAR/CAMERA)
When used in a system, this switch can select the camera mode or color bar mode regardless of the selection switch on the camera head.
BAR : EBU colour bar is provided from the video output connectors 23 on the RCU.
CAMERA : The system is in operating condition after necessary adjustments.

8 Auto White/Auto Black Set Switch (AWC/HOLD/ABC)
This switch sets the white balance and black balance automatically as;
AWC : This position is used for setting the white balance. While aiming the camera at a white object, press this switch up momentarily to activate automatic white balance setting. The white balance is automatically set instantly. The auto warning indicator in the viewfinder is blinking for approximately one second to indicate the white balance setting and it goes off when the white balance setting is completed. If the auto warning indicator remains ON, reset the white balance after confirming the position of filter wheel. The white balance set at this position is held for a long period of time by a internal backup battery even after power switch is turned OFF. Therefore, if the color temperature of the object/scene condition remains same, it is unnecessary to reset the white balnce. When the color temperature is changed from indoor to outdoor, for example, the white balance should be reset.
Note : The size of white object for white balance setting should be more than 10% of picture area and it should position at the center portion of picture.
HOLD : This position holds the white balance and black balance set at the AWC and ABC position for a long period of time.
ABC : This position is used for setting the black balance. Press this switch down momentarily to activate automatic black balance setting. The lens iris is automatically closed for blocking the incoming light when the power servo control zoom lens is set in the remote (REM) iris mode and the lens iris control 14 to the AUTO position, and the black balance is set automatically in approximately 4 seconds. After completing the black balance setting, the lens iris is automatically returned to the previous position. If the back balance must be set in the manual iris control mode, the incoming light should be blocked by closing the lens iris manually, setting the filter wheel to No. 4 (CLOSE) or capping the lens.
The auto warning indicator in the viewfinder is blinking while the black balance is being set and it goes off when the black balance setting is completed. If the auto warning indicator remains ON, reset the black balance.

9 Auto Centering Set Switch (AUTO CENTERING, SET)

When the auto/manual centering selection switch on the camera is set to the AUTO position, this switch sets the horizontal and vertical centering of the red and blue picture to coincide with the green picture.

While aiming the camera at the auto centering set chart, press this switch down momentarily to activate automatic centering adjustment. The horizontal and vertical centering of red and blue picture are automatically adjusted to match the green picture in maximum 5 seconds. The auto warming indicator in the viewfinder is blinking while the centering is being adjusted and it goes off when the centering adjustment is completed. If the auto warning indicator remains ON even after repeating the automatic centering setting, reset the automatic centering adjustment while referring to "Note" below. (If the centering of red, blue and green picture are mismatched considerably, the centering may not be set automatically with auto centering set chart and the auto warning indicator remains ON).

The centering adjustment set at this position is held for a long period of time by a internal backup battery even after the power switch is turned OFF. However, it is recommended to reset the centering adjustment prior to the recording.

Note :

1. The lens focus should be adjusted prior to the automatic centering adjustment.
2. Do not move the camera and do not aim the camera at moving object during automatic centering adjustment.
3. If the automatic centering can not be set with the auto centering set chart, aim the camera at the rear side of auto centering set chart and set the automatic centering few times so that the red, blue and green images are roughly matched. They can also be matched roughly by setting the automatic centering while aiming the camera at the normal fine object such as human, dolls, flowers etc. In this case it is recommended to set the zoom lens to the wide angle position. After roughly matching the red, blue and green images, reset the automatic centering precisely while aiming the camera at the auto centering set chart.
4. The following object are not recommended to set the automatic centering adjustment.
   - Window chart
   - Gray scale chart
   - Registration chart
   - Linearity (ball) chart
   - Single color object
   - Object which has less contrast
   - Object which has no white or less white
   - Coarse pattern object

10 Subcarrier Phase Coarse Switch for Gen-lock (SC PHASE COARSE)

The subcarrier phase of the camera signal is adjusted from 0° to 360° in 90° steps with this switch for matching the phase of burst signal at the gen-lock connector 16.

11 Subcarrier Phase Fine Control for Gen-lock (SC PHASE FINE)

This control allows fine adjustment of the subcarrier phase previously set by the subcarrier phase coarse switch 10. It gives continuous control of up to plus 90° subcarrier phase to match the phase of burst signal at the gen-lock connector 16.

12 Horizontal Phase Control for Gen-lock (H PHASE)

The horizontal phase of the camera signal is adjusted to match the horizontal phase of the signal at the gen-lock connector 16.

13 Total Pedestal Control (TOTAL PEDESTAL)

This control can adjust the pedestal level of video signal (luminance). Turn this control clockwise (or counterclockwise) to increase (or decrease) the pedestal level. At the center position, the pedestal level is preset to the standard level.

14 Lens Iris Control (IRIS AUTO-CLOSE/OPEN)

This control selects the operational condition of auto iris power servo control zoom lens as;

AUTO : The iris level of auto iris power servo control zoom lens on the camera head is automatically controlled.

CLOSE/OPEN : The iris level of auto iris power servo control zoom lens on the camera can be manually controlled by turning this control.

Note: Iris control selection switch on auto iris power servo control zoom lens should be normally set to the REM (remote) position. If the iris control selection switch is set to the AUTO position, the auto iris level can be adjusted by turning this control. In this case, do not set this control to the AUTO position.

15 **32-pin Camera Cable Connector**
32-pin Camera Cable is connected between the camera head and RCU in the system operation.

16 **Gen-lock Input Connector (BNC) (GEN-LOCK IN)**
These connectors are used to supply the black burst signal or VBS signal from the system reference. Two connectors are convenient for bridging or looping through application.

17 **Gen-Lock Input Termination Switch (75Ω/Hi-Z)**
When bridging or looping through the gen-lock signal, set this switch in the Hi-Z position. Otherwise, set to 75Ω position.

18 **Auxiliary Input Connector (BNC) (AUX IN)**
These connectors are used to supply the lineview signal from the special effects generator. Two connectors are convenient for bridging or looping through application.

19 **Auxiliary Input Termination Switch (75Ω/Hi-Z)**
When bridging or looping through the auxiliary signal, set this switch in the Hi-Z position. Otherwise, set to 75Ω position.

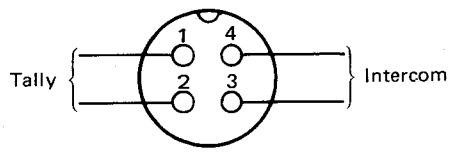
20 **Red Output Connector (BNC) (R OUTPUT)**
This connector is used to provide the non-composite red video output signal for chroma keying.

21 **Green Output Connector (BNC) (G OUTPUT)**
This connector is used to provide the non-composite green video output signal for chroma keying.

22 **Blue Output Connector (BNC) (B OUTPUT)**
This connector is used to provide the non-composite blue video output signal for chroma keying.

23 **Video Output Connectors (BNC) (VIDEO OUT)**
These connectors are used to provide the PAL composite video output signals to the special effects generator, the video monitor or VTR.

24 **Tally and Intercom Input Connector (TALLY & INTERCOM)**
The 4-pin cable is connected between this connector and the tally/intercom output of the special effects generator.



Optional 5" Viewfinder WV-VF37

25 **Viewfinder Adjusting Knob**
The angle of optional 5" viewfinder can be adjusted for easy viewing.

26 **Tally Lamp**
This tally lamp is operated only when this unit is used in full system operation with optional RCU and special effects generator. The tally lamp indicates the camera operator and other people that this camera system is actually shooting the scene.

27 **Peaking ON/OFF Switch (PEAKING ON/OFF)**
This switch is set to the OFF position in the normal operating condition. When the camera is aimed at a weakly illuminated scene, set the switch to the ON position so that focusing of picture in the viewfinder is easily made.

28 **Tally ON/OFF Switch (TALLY ON/OFF)**
This switch turns ON/OFF the tally lamp 26 located in front of the viewfinder.

29 **Brightness Control (BRIGHT)**
Turn this control clockwise to increase picture brightness only in the viewfinder.

30 **Contrast Control (CONTRAST)**
Turn this control clockwise to increase picture contrast only in the viewfinder.

31 **Auto Warning/Recording/Tally Indicator**
This indicator blinks while the white balance, black balance or centering is being automatically set. This indicator lights when the automatic white balance, black balance or centering is set improperly. If the indicator lights, reset the previous automatic operation. Since this indicator is also operated as a recording indicator and a tally lamp for a system operation, the VTR start/stop button on the zoom lens should be switched OFF and the corresponding tally circuit should be defeated by operation of special effects generator for the auto warning indication.

CIRCUIT DESCRIPTION

1. 5" Viewfinder WV-VF37

The 5" viewfinder circuit contains following circuits.

1-1 +12V DC, +9V DC Regulator Circuit
1-2 Video Amplifier Circuit
1-3 Sync Separation Circuit
1-4 Vertical Sawtooth Circuit
1-5 Vertical Deflection Circuit
1-6 Horizontal Deflection Circuit
1-7 High Voltage Circuit
1-8 Tally Indicator Drive Circuit

1-1 +12V DC, +9V DC Regulator Circuit

Outline

This circuit generates the +12V DC and +9V DC power by regulating the +12V DC supplied from the camera head or remote control unit (RCU). The +12V is sent to heater of the cathode ray tube (CRT). The +9V is fed to all circuit in the viewfinder as a power source.

Details

The +12V DC is fed to the emitter of transistor Q301 and Q305. The voltage at the collector of Q301 is fed to pin 4 of IC301.
The voltage at pin 1 of IC301 controls the base of Q301. In this way, the voltage at the emitter of Q301 is kept constant. VR301 (+12V ADJ) is a control for adjusting the +12V.
The voltage at the collector of Q305 is fed to pin 4 of IC300.
The voltage at pin 1 of IC300 controls the base of Q305. In this way, the voltage at the emitter of Q305 is kept constant. VR300 (+9V ADJ) is a control for adjusting the +9V.
The +9V is supplied all circuit in the 5" viewfinder as a power source.
When the camera is used STANDBY position, Low (L) level is fed to the base of Q306 and turns ON Q306. DC voltage at +9V DC regulator IC300 is cut off.

1-2 Video Amplifier Circuit

Outline

This circuit amplifies the video signal supplied from the camera head through pin 1 of CN2. The amplified video signal is supplied to the cathode ray tube (CRT).

Details

The video signal at pin 1 of CN2 is fed to amplifier Q2 and Q3 through buffer Q1 and VR1 (CONTRAST). The amplified video signal at the collector of Q3 is sent through buffer Q4, D2 and D1 to the emitter of amplifier Q6. The vertical (V) sawtooth signal is supplied from the V deflection circuit to the base of switching amplifier Q5 to generate the V blanking (BL) pulse. The V BL pulse at the collector of Q5 is mixed with the video signal for eliminating the vertical retrace line on the CRT screen.
The amplified video signal which is mixed with the level indicator signal and the V BL pulse is applied from the collector of Q6 through L2/R23 and pin 3 of CN4 to grid-1 of CRT.
The voltage which is set by VR2 (BRIGHTNESS) and VR3 (BRIGHTNESS PRESET) is fed through buffer Q7, D4 and pin 4 of CN4 to cathode (K) of CRT to set the brightness of CRT screen. The flyback pulse sent from the high voltage circuit through pin 2 of CN3 to D5 is mixed with brightness-controlled DC voltage and supplied to cathode (K) to eliminating the horizontal retrace line on the CRT. When SW1 (PEAKING ON/OFF) is set to the ON position, the frequency response at 3MHz portion of video signal is boosted for making focus of picture on the viewfinder easily.

1-3 Sync Separation Circuit

Outline

This circuit separates the sync signal from the video signal supplied from the camera and sends it to other circuit.

Details

The video signal obtained at the emitter of buffer Q1 in the video amplifier circuit is applied to sync separator Q8 which detects only the sync signal. The sync signal at the collector of Q8 is sent to the horizontal deflection circuit and level indicator circuit. The separated sync is fed through buffer Q9 to integrator consisting of R38 and C20 where the horizontal (H) sync is removed and only the vertical (V) sync remains. The V sync thus made is supplied through inverter Q10 to the vertical sawtooth circuit. The V sync signal at the cross point of R38 and C20 is sent to the vertical deflection circuit through integrators consisting of R39/C21 and R40.

1-4 Vertical Sawtooth Circuit

Outline

This circuit generates the vertical sawtooth signal and sends it to the level indicator drive circuit.

Details

The negative vertical (V) sync signal is fed from the sync separation circuit through pin 1 of B15 and CN5 to V sawtooth generator Q202. During the positive portion of V sync signal, C207 is charged through R243. During the negative portion of V sync signal, Q202 turns ON and C207 is discharged through Q202. Therefore, the V sawtooth signal is made at the emitter of Q202. The sawtooth signal is then fed to the level indicator drive circuit through amplifier Q203.

1-5 Vertical Deflection Circuit

Outline

This circuit generates vertical (V) deflection sawtooth current for vertical scanning of beam inside the cathode ray tube (CRT).

Details

The positive V sync signal is supplied from the sync separation circuit to V oscillator Q100 as a trigger pulse. Q100 is a free-running V sawtooth generator using positive feedback and works as follows.

When the power switch is turned ON, potential at the collector of Q100 becomes low (L) momentarily due to discharge of C101 and C102, and then gradually in creases with the time constant of R107, VR103 (V SIZE), R106, C101, C102 and R104 (Ⓐ). At the same time, the base voltage of Q100 also increases gradually since the collector potential of Q100 is fed back to it base through buffer Q101 and VR100 (V HOLD). Q100 turned ON when its base potential exceeds the specific level. When Q100 is turned ON, C101 and C102 begin to be discharged, and the trigger signal Ⓓ, which is made by filtering the V deflection signal Ⓒ with R112, C104 and C103, is positively fed back to the base of Q100 in order to keep turning ON Q100 until C101 and C102 are fully discharged.

When C101 and C102 are fully discharged, the base voltage of Q100 becomes L level turning it OFF and C101 and C102 begin to be charged again through R107, VR103. As a result, the V sawtooth signal is kept generating.

When the V sync signal is fed to Q100, Q100 generates the V sawtooth signal whose frequency and phase coincide with the V sync signal.

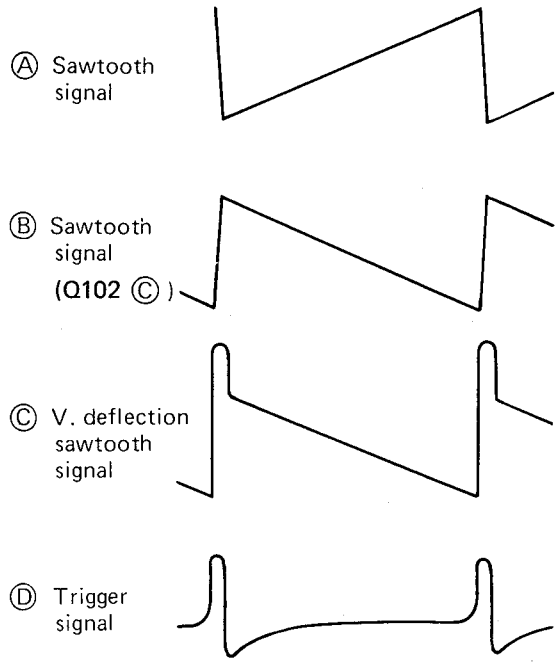


Fig. 1-5 Vertical Sawtooth Signal Generation

The V sawtooth signal thus generated is fed through buffer Q101, amplifier Q102, V deflection output Q103/Q104 and pin 3 of CN7 to the V deflection coil. The V sawtooth signal at the emitter of Q101 is integrated by R109, VR102 (V LIN) and C102 into the V parabola signal and it is fed back to V sawtooth generator Q100 for V linearity correction.

VR100 (V HOLD) is a control for setting the oscillating frequency of Q100 in the steady state.

1-6 Horizontal Deflection Circuit

Outline

This circuit generates horizontal deflection sawtooth current for horizontal scanning of beam inside the cathode ray tube (CRT).

Details

The horizontal (H) sync signal is supplied from the sync separation circuit through pin 3 of CN5 and pin 1 of IC202 to the phase comparator where the H sync signal is compared in phase with the H sawtooth signal supplied to pin 3 of IC202. The phase difference between two signal is converted into the DC voltage which is sent to the H oscillator to control oscillating frequency. The oscillated pulse is then fed through the H drive circuit and step-up transformer T201 to H deflection output Q206. The H sawtooth current is sent from the emitter of Q206 through the H deflection coil, L4 and L3 (H SIZE) into its collector.

The H flyback pulse at the emitter of Q206 is integrated by R231 and C214 into the V parabola signal, which is sent to the phase comparator. The H flyback pulse is also sent to the high voltage circuit.

1-7 High Voltage Circuit

Outline

This circuit generates high voltages for cathode ray tube (CRT) electrodes.

Details

The flyback pulse generated in the horizontal (H) deflection circuit is supplied to the primary winding of the flyback transformer (FBT) T200 to step up the flyback pulse to necessary level.

The boosted pulses obtained at the secondary winding of FBT are rectified to generate high voltages.

+9KV generated by rectifying the boosted pulse in T200 and obtained at pin A of T200 is fed to the CRT anode.

+390V obtained by rectifying the boosted pulse at pin 5 of T200 with D210 is sent to grid-2 (G2). The voltage which is set by VR203 (FOCUS) is applied to grid-3 (G3). +120V obtained by rectifying the boosted pulse at pin 6 of T200 with D211 is fed to the video amplifier circuit as a power source. The boosted H flyback pulse obtained at pin 6 of T200 is supplied to the video amplifier circuit to make the H BL pulse which eliminates the H retrace line on the CRT screen.

1-8 Tally Indicator Drive Circuit

Outline

This circuit lights ON or OFF the tally lamp and AUTO warning indicator with the control signal sent from the camera.

Details

When the camera is selected in the system using the special effects generator, the high (H) level is fed to switching transistor Q207 to turn ON Q207. Therefore, the collector of Q207 is grounded and the tally LED D213 on the rear of viewfinder lights. At the same time, the H level is sent to switching transistor Q303 to turn ON Q303 and Q302. As a result, +12V is fed to tally lamp PL1 on the front of camera to light it ON. When the SW2 (TALLY ON/OFF) is set to the OFF position, the tally lamp PL1 does not light.

When the automatic centering, white balance and black balance is being set the pulse whose frequency is approximately 4Hz is fed to switching transistor Q207 to turn it ON and OFF. Therefore the AUTO indicator D213 flashes. If the automatic centering, white balance and black balance is set improperly the 60Hz vertical scanning start (Vs) pulse is fed to Q207 and D213 lights ON.

2 Remote Control Unit WV-RC32

The remote control unit (RCU) WV-RC32 contains following circuits.

2-1 +12V DC Regulator Circuit
2-2 Gen-lock Signal Circuit
2-3 PAL Output Circuit
2-4 R Output Circuit
2-5 B Output Circuit
2-6 G Output Circuit
2-7 AUX Output Circuit
2-8 ACC/AWC/ABC Control Circuit
2-9 Intercom Circuit
2-10 Tally Control Circuit
2-11 Gain/Pedestal Control Circuit

2-1 +12V DC Regulator Circuit

Outline

This circuit generates +12V DC from switching Regulator board of +16V DC. The +12V is fed to all circuit in the remote control unit (RCU) as a power source.

Details

Approx., +16V DC supplied from the Switching Regulator is fed to +9V DC regulator consisting of Q85, Q86 and Q87. Transistor Q87 amplifies the error between the 7.0V zener (D16) reference and its base potential and forwards it to Q86. If the Q85 emitter potential changes, the base potential of Q87 also changes, and a voltage change appears at its collector. This change controls the emitter of Q86 in the direction which is same as the voltage change at Q86 emitter. In this way, the voltage at the Q85 emitter is kept constant. VR23 (+12V ADJ) is a control for adjusting the +12V.

2-2 Gen-lock Signal Circuit

Outline

This circuit receives the black burst signal supplied to the Gen-lock input connector on the rear of remote control unit (RCU). After phase-shifting the burst on the black burst signal, it is sent to the camera through a camera cable.

Details

The black burst signal Ⓐ supplied to the Gen-lock connector is sent through pin 2 of CN1 and buffer Q1 to sync separator Q2. The separated sync signal Ⓑ obtained at the collector of Q2 is fed through buffer Q3 and VR6 (SYNC BALANCE) to the emitter of buffer Q4 and it is mixed with the black burst signal Ⓐ which comes through Q4. Therefore, the sync signal on the black burst signal is removed and only the burst signal Ⓒ remains. The burst signal at the emitter of Q4 is routed through band pass filter L1/C8, amplifier Q5 and buffer Q6 to the collector of burst gate Q7. VR1 is a control to cancel the sync signal.

The sync signal Ⓑ at the collector of Q2 is fed to 2fH eliminator in IC1, where the equalizing and serration pulses, and the vertical (V) sync component are removed and only the horizontal (H) sync signal remains. The H sync signal is fed to monostable multivibrator and the burst gate pulse Ⓓ is generated at pin 7 of IC1. The burst gate pulse Ⓓ is sent to the base of Q7. VR1 (BURST GATE) is a control to set the phase of the burst gate pulse.

Q7 turns OFF during the negative portion of burst gate pulse Ⓓ and only the burst signal is gated. The gated burst signal Ⓔ is then fed to phase-splitter Q8. The burst signal at the emitter of Q8 is sent to pins 3 and 11 of SW2 (SC PHASE COARSE SWITCH) and the burst signal at the collector of Q8 is fed through buffer Q9 to pins 1 and 9 of SW2. The selected burst signal at pin 6 of SW2 is routed through 90° phase-shifter Q10 and buffer Q11 to pins 10 and 8 respectively. The burst signal whose phase is shifted 90° in step by SW2 is obtained at pin 7 of SW2. The selected burst signal is sent to another 90° phase shifter Q12 which shifts the phase of burst signal 90° continuously with VR4 (SC PHASE FINE). As a result, the phase of burst signal is shifted 360° by use of SW2 and VR4.

The phase-shifted burst signal Ⓔ is then fed through buffer Q13 to the base of buffer Q14, where it is mixed with the sync signal Ⓕ supplied from the collector of Q2 through inverter IC2 (pins 1 - 3) and VR3 (SYNC LEVEL), and the black burst signal G is made. The black burst signal Ⓖ whose burst phase is shifted 360 is applied through buffer Q14, VR5(GEN-LOCK LEVEL) and amplifier Q15 to black burst output Q16 - Q18. The black burst signal is then fed to the camera through pin 2 of CN6 and pin 24 of 32-pin connector CN35. VR2 (SC 90° PHASE) is a control to shift the burst phase 90°.

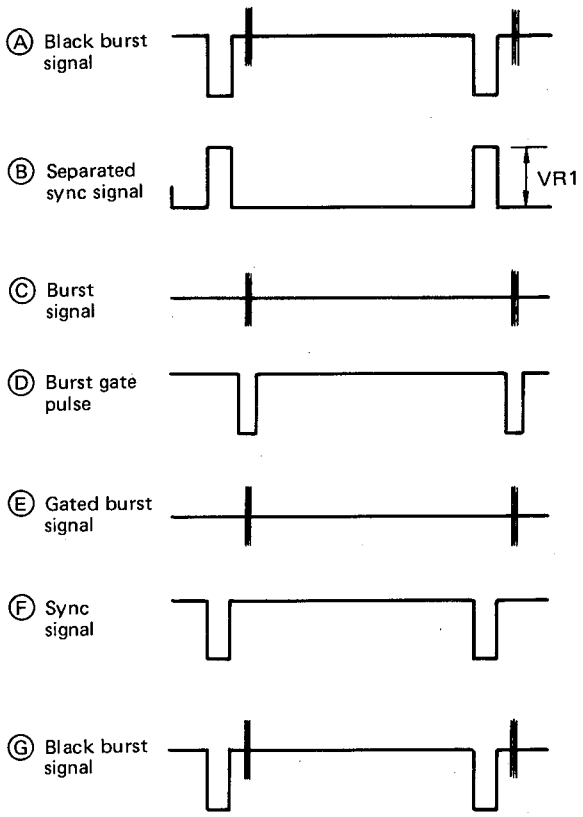


Fig. 2-2 Black Burst Signal

2-3 PAL Output Circuit

Outline

The circuit receives the PAL signal from the camera through the camera cable and sends it to the video output connector on the rear of RCU after correcting the frequency response of PAL signal depending to the length of camera cable.

Details

The PAL signal is fed from the camera through pin 21 of CN35 and pin 2 of CN2 to buffer Q18. The PAL signal obtained at the emitter of Q18 is routed via VR7 (PAL GAIN PRESET) and amplifier Q19 to buffer Q26. The signal at the emitter of Q26 is negatively fed back to the base of amplifier to correct the frequency response. The level and frequency response of feedback signal is selected by SW4 (CABLE LENGTH COMPENSATION) depending upon the camera cable length for the optimum correction. When SW4 is set to the 20m position, base potential of Q22 and Q23 becomes high (H) level turning them ON, and the signal at the emitter of Q26 is fed back through R80/C29, Q23 and R73 to the base of Q19. At the same time, R69 and C25 are connected between the feedback loop and ground through Q22.

When SW4 is set to the 50m or 100m position, switching transistors operate as shown in the Table below and the level and frequency response of feedback signal are changed.

Position of SW4	Q20 Q25	Q21 Q24	Q22 Q23
20m	OFF	OFF	ON
50m	OFF	ON	OFF
100m	ON	OFF	OFF

The frequency-compensated PAL signal obtained at the emitter of Q26 is routed through buffer Q27, VR8 (PAL GAIN) and amplifier Q28 to PAL output Q29 - Q31. The PAL signal at the emitters of Q30/Q31 is sent through pins 1 and 4 to the video output connectors CN28 and CN29.

Details

The R signal is fed from the camera through pin 25 of CN35 and pin 2 of CN3 to buffer Q36. The R signal at the emitter of Q38 is supplied through VR10 (R OUTPUT GAIN PRESET) and amplifier Q37 to buffer Q44. The signal at the emitter of Q44 is negatively fed back to the base of Q37 to compensate the frequency response of R signal. The level and frequency response of feedback signal is selected by SW4 (CABLE LENGTH COMPENSATION) depending upon the camera cable length for the optimum compensation. When SW4 is set to the 20m position, base potential of Q40 and Q41 becomes high (H) level to turn them ON and the signal at the emitter of Q44 is fed back through R135/C47, Q41 and R128 to the base of Q37. At the same time, R124 and C43 are connected between the feedback loop and ground through Q40.

When SW4 is set to the 50m or 100m position, switching transistors operate as shown in the Table below and the level and frequency response of feedback signal are changed.

Position of SW4	Q38 Q43	Q39 Q42	Q40 Q41
20m	OFF	OFF	ON
50m	OFF	ON	OFF
100m	ON	OFF	OFF

The frequency-compensated R signal obtained at the emitter of Q44 is supplied through VR11 (R OUTPUT GAIN) and amplifier Q45 to R output Q46 - Q48. The R signal at the emitters of Q47/Q48 is sent through pin 2 of CN10 to the R output connector CN27.

2-4 R Output Circuit

Outline

This circuit receives the red (R) signal from the camera through the camera cable and sends it to the R output connector on the rear of RCU after compensating the frequency response of R signal depending on the length of camera cable.

2-5 B Output Circuit

Outline

This circuit receives the blue (B) signal from the camera through the camera cable and sends it to the B output connector on the rear of RCU after compensating the frequency response of B signal depending on the length of camera cable.

Details

The B signal is fed from the camera through pin 27 of CN35 and pin 2 of CN4 to buffer Q49. The B signal at the emitter of Q49 is supplied through VR12 (B OUTPUT GAIN PRESET) and amplifier Q50 to buffer Q57. The signal at the emitter of Q57 is negatively fed back to the base of Q50 to compensate the frequency response of B signal. The level and frequency response of feedback signal is selected by SW4 (CABLE LENGTH COMPENSATION) depending upon the camera cable length for the optimum compensation. When SW4 is set to the 20m position, base potential of Q53 and Q54 becomes high (H) level to turn them ON and the signal at the emitter of Q57 is fed back through R172/C62, Q54 and R165 to the base of Q50. At the same time, R161 and C58 are connected between the feedback loop and ground through Q53.

When SW4 is set to the 50m or 100m position, switching transistors operate as shown in the Table below and the level and frequency response of feedback signal are changed.

Position of SW4	Q51 Q56	Q52 Q55	Q53 Q54]
20m	OFF	OFF	ON
50m	OFF	ON	OFF
100m	ON	OFF	OFF

The frequency-compensated B signal obtained at the emitter of Q57 is supplied through VR13 (B OUTPUT GAIN) and amplifier Q58 to B output Q59 - Q61. The B signal at the emitters of Q60/Q61 is sent through pin 2 of CN11 to the B output connector CN26.

2-6 G Output Circuit

Outline

This circuit receives the green (G) signal from the camera through the camera cable and sends it to the G output connector on the rear of RCU after compensating the frequency response of G signal depending on the length of camera cable.

Details

The G signal is fed from the camera through pin 26 of CN35 and pin 2 of CN5 to buffer Q62. The G signal at the emitter of Q62 is supplied through VR14 (G OUTPUT GAIN PRESET) and amplifier Q63 to buffer Q70. The signal at the emitter of Q70 is negatively fed back to the base of Q63 to compensate the frequency response of G signal. The level and frequency response of feedback signal is selected by SW4 (CABLE LENGTH COMPENSATION) depending upon the camera cable length for the optimum compensation. When SW4 is set to the 20m position, base potential of Q66 and Q67 becomes high (H) level to turn them ON and the signal at the emitter of Q70 is fed back through R209/C77, Q67 and R202 to the base of Q63. At the same time, R198 and C73 are connected between the feedback loop and ground through Q66.

When SW4 is set to the 50m or 100m position, switching transistors operate as shown in the Table below and the level and frequency response of feedback signal are changed.

Position of SW4	Q64 Q69	Q65 Q68	Q66 Q67
20m	OFF	OFF	ON
50m	OFF	ON	OFF
100m	ON	OFF	OFF

The frequency-compensated G signal obtained at the emitter of Q70 is supplied through VR15 (G OUTPUT GAIN) and amplifier Q71 to G output Q72 - Q74. The G signal at the emitters of Q73/Q74 is sent through pin 2 of CN12 to the G output connector CN25.

2-7 Aux Output Circuit

Outline

This circuit receives the lineview signal supplied from the special effects generator to the AUX connector on the rear of the RCU and sends it to the camera through the camera cable.

Details

The lineview signal is fed from the AUX connector CN30/CN31 through pin 2 of CN8 to C32.

The lineview signal obtained at C32 is fed through VR9 (AUX GAIN) and amplifier Q32 to AUX output A33 - Q35. The lineview signal at the emitters of Q34/Q35 is fed to the camera via pin 2 of CN9 and pin 23 of CN35.

2-8 ACC/AWC/ABC Control Circuit

Outline

When the camera is used with the remote control unit (RCU), the automatic centering white balance and black balance is set from the RCU. This circuit sends the trigger signal for the setting to the camera.

Details

When the CAMERA/BAR Selection Switch SW5 is set to the CAMERA position, high (H) level is appear at the base of Q88. Therefore, while CAMERA/BAR Selection Switch is set to the camera position, if Auto White/Auto Black Set Switch SW6 or Auto Centering Set Switch SW7 is turned to set position, due to turns the Q88 ON momentarily. As a result, negative trigger appear at the collector of Q88 and which is sent to pin 15, 16 or 17 of CN35 to the camera for set them.

2-9 Intercom Circuit

Outline

This circuit receives the intercom signal form the special effects generator in the system application for oral communication between the camera operators and director. After amplifying signal, it is sent to the intercom jack on the camera and the RCU.

Details

The intercom signal supplied to pin 3 of the Tally & Intercom connector CN34 is sent through buffer Q77 to amplifier Q78. The amplified signal at the collector of Q78 is routed through buffer Q79, pin 6 of CN14 and pin 30 of CN35 to the camera. The potential which is set by the camera/Color Bar Selection Switch SW5 is mixed with the intercom signal through R245 and sent to the camera for the selection of camera or color bar picture. The signal obtained at the collector of Q78 is applied through buffer Q80, the Intercom Level Control VR21 to the Intercom Jack CN36. The intercom signal at pin 3 of CN15 is returned through buffer Q81 to pin 4 of the Tally & Intercom connector CN34.

2-10 Tally Control Circuit

Outline

This circuit receives the tally control signal from the special effects generator in the system when the picture of camera is selected into the line output, and sends the control signal to the tally LED/lamp on the camera and the remote control unit (RCU) to light them.

Details

When the picture of the camera is selected into the line output by the special effects generator in the system, pins 1 and 2 of the Tally & Intercom connector CN32 are connected. The low (L) level at the base of Q75 turns ON Q75 and Q76. Therefore, tally LED D14 on the RCU lights. The high (H) level at the collector of Q75 is sent through pin 5 of CN14 and pin 3 of CN35 to light the tally LED/lamp on the camera.

2-11 Gain/Pedestal Control Circuit

Outline

When the camera is used with the remote control unit (RCU), the pedestal is controlled from the RCU.

Details

The DC voltage set by VR20 (TOTAL PEDESTAL) is fed to the camera through CN35.

ADJUSTMENT PROCEDURE

1 Disassembling Procedure for Adjustment

1-1 5" Viewfinder WV-VF37

- Remove five screws fixing the upper cover and remove the cover. (Fig. 1-1-1)

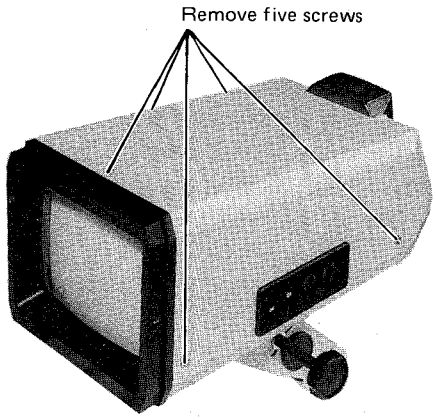


Fig. 1-1-1

1-2 Remote Control Unit WV-RC32

- Remove four screws fixing the upper panel and remove the panel (Fig. 1-2-1)

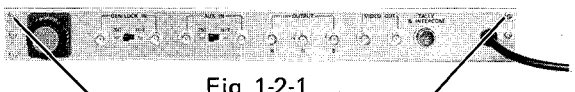


Fig. 1-2-1

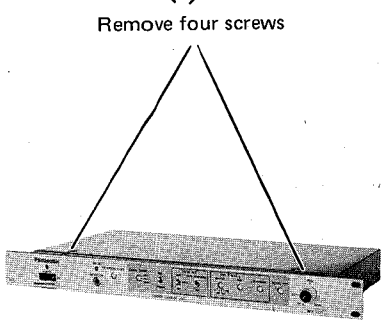


Fig. 1-2-1

Steps denoted by shaded outlines do not have to be performed if only pick-up tubes are replaced.

2 Adjustment Procedure

2-1 Connection and Setting Up for Adjustment

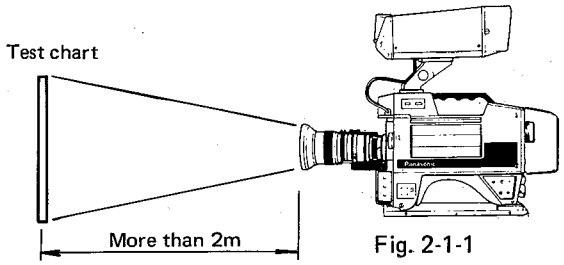


Fig. 2-1-1

Position of Controls and Switches on the Camera

(Right Side) - Viewed from front -

Filter Wheel	1
High Gain Selection Switch	0 dB
Color Bar/Camera Selection Switch	CAMERA
Standby/Operate Selection Switch	OPERATE
Auto/Manual Centering Selection Switch	Manual
R-G/Y/B-G Selection Switch	Y
LEVEL IND ON/OFF SWITCH	OFF

(Lens)

Iris Control Selection Switch	MAN

Set-up

- Turn ON the color camera for at least 30 minutes prior to adjustment.
- Distance between the camera and test chart should be more than 2m.
- Light : 1400 lux incident.

2-2 5" Viewfinder WV-VF37

- Set the Monitor/PIX Select Switch to Y position.
- Refer to page 16 for the test points and adjusting controls.

(a) +12V adjustment

Test points :	Pin 5 of CN300	Power board
	Pin 3 of CN300	Power board
Adjust :	VR301 (+12V ADJ)	Power board

- Remove the screws fixing the printed circuit boards. (Fig. 2-2-1)

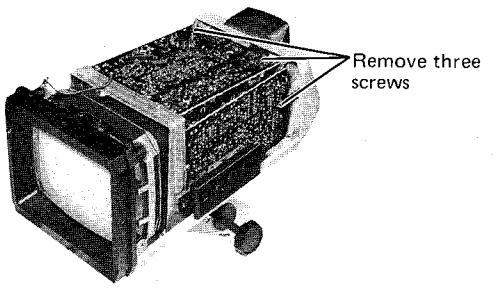


Fig. 2-2-1

- Loosen two screws holding the front panel (Fig. 2-2-2) and remove the front panel. (Fig. 2-2-3)

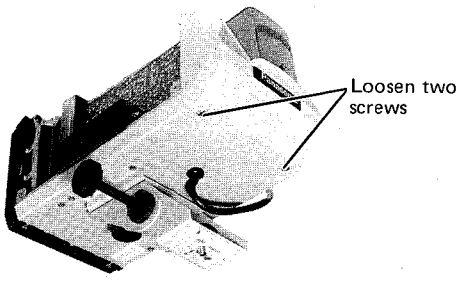


Fig. 2-2-2

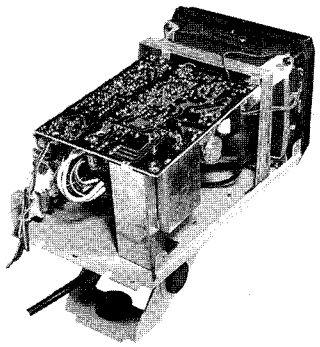


Fig. 2-2-3

- Connect the digital voltmeter (DVM) probe between pin 5 of CN300 and pin 3 of CN300 (GND) on the Power board.
- Adjust +12V ADJ VR301 for +12V±0.05V.

(b) +9V adjustment

Test points :	Pin 1 of CN300	Power board
	Pin 3 of CN300	Power board
Adjust :	VR300 (+9V ADJ)	Power board

- Connect the DVM probe between pin 1 of CN300 and pin 3 of CN300 (GND) on the Power board.
- Adjust +9V ADJ VR300 for +9V±0.05V.

(c) Horizontal and vertical hold preset adjustment

Adjusts :	VR100 (V HOLD)	Deflection board
	VR202 (H HOLD)	Deflection board

- While observing the viewfinder, adjust V HOLD VR100 and H HOLD VR202 so that picture in the viewfinder is locked vertically and horizontally.

Steps denoted by shaded outlines do not have to be performed if only pick-up tubes are replaced.

(d) Centering magnets adjustment

Adjusts :	VL3 (H SIZE)	Deflection board
	VR103 (V SIZE)	Deflection board
	Centering magnets	
Observe :	Viewfinder	

- Reduce picture size using H SIZE VL3 and V SIZE VR103 so that the entire raster is observed on the viewfinder.
- Cap on the lens or set the filter wheel 4.
- Adjust the centering magnets (See Fig. 2-2-4) so that the raster comes to the center of viewfinder screen. (Fig. 2-2-5)

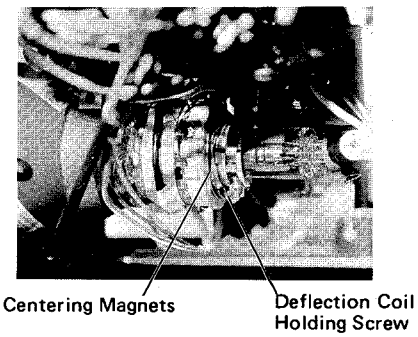


Fig. 2-2-4

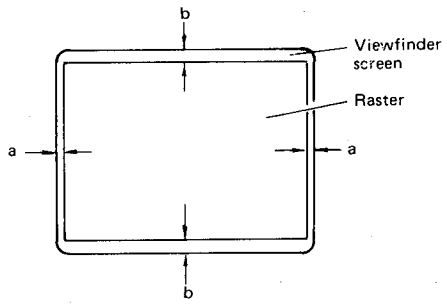


Fig. 2-2-5

(e) Picture tilt adjustment

Adjust :	Deflection coil
Observe :	Viewfinder

- Loosen the deflection coil holding screw. (Fig. 2-2-4)
- Observe the viewfinder and turn the deflection coil so that the image is straight.
- Tighten the deflection coil holding screw.

(f) Horizontal and vertical size, vertical linearity adjustment

Adjusts :	VL3 (H SIZE)	Deflection board
	VR103 (V SIZE)	Deflection board
	VR102 (V LIN)	Deflection board
Observe :	Viewfinder	

- Aim the camera at the registration chart.
- Set CONTRAST VR1 and BRIGHTNESS VR2 to the optimum position.
- Adjust H SIZE VL3 so that the horizontal size of raster is 9.5 ± 0.1 cm.
- Adjust V SIZE VR102 and V LIN VR103 repeatedly so that the circle in the chart is as rearly a true circle as possible.

  Note : If the picture jumps or rolls vertically in this adjustment, readjust V HOLD VR100.

(g) Horizontal and vertical hold adjustment

Test points :	Pin 3 of CN4	Video amp board
	Pin 4 of CN4	Video amp board
Adjusts :	VR100 (V HOLD)	Deflection board
	VR202 (H HOLD)	Deflection board
Observe :	Viewfinder	

- While observing the viewfinder, turn V HOLD VR100 clockwise and counterclockwise to confirm the vertical hold range of VR100.
- Set VR100 to the mechanical center of its vertical hold range.
- Connect the oscilloscope to pin 3 and pin 4 of CN4.
- Trigger the oscilloscope at H rate (Use TP8(HD), Mother board).
- Adjust H HOLD VR202 so that the leading edge of horizontal blanking pulse at pin 4 coincides with the leading edge of blanking duration at pin 3. (Fig. 2-2-6)

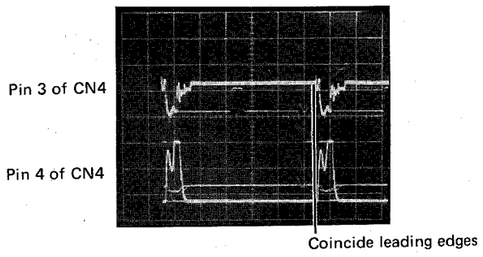


Fig. 2-2-6

Steps denoted by shaded outlines do not have to be performed if only pick-up tubes are replaced.

- Turn ON and OFF the power switch and confirm that the picture in the viewfinder is locked horizontally and vertically.
- Confirm that the raster positions at the center of viewfinder screen. If not, readjust (e) Centering magnets adjustment.

(h) Subbrightness adjustment

Adjusts :	VR1 (CONTRAST)	Video amp board
	VR2 (BRIGHTNESS)	Video amp board
	VR3 (SUBBRIGHTNESS)	Video amp board
Observe :	Viewfinder	

- Turn CONTRAST VR1 and BRIGHTNESS VR2 fully counterclockwise.
- Turn BRIGHTNESS VR2 back about 45° so that the slit of brightness control knob positions level. (Fig. 2-2-7)

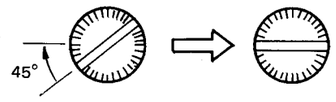


Fig. 2-2-7

- Adjust BRIGHTNESS PRESET VR3 so that the raster just disappears.

(i) Contrast and brightness adjustment

Adjusts :	VR1 (CONTRAST)	Video amp board
	VR2 (BRIGHTNESS)	Video amp board
Observe :	Viewfinder	

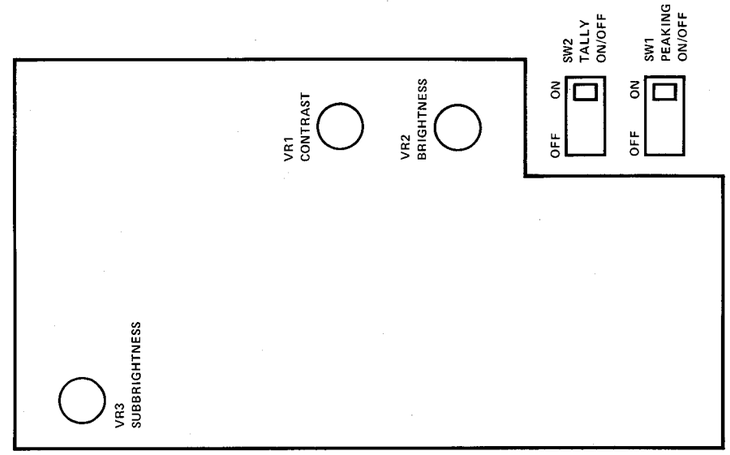
- Aim the camera at the logarithmic gray scale chart.
- While changing the iris from the closed position to F1.4, adjust CONTRAST VR1 and BRIGHTNESS VR2 so that the black-and-white chip gradations will be the same on the viewfinder as that in the monitor.

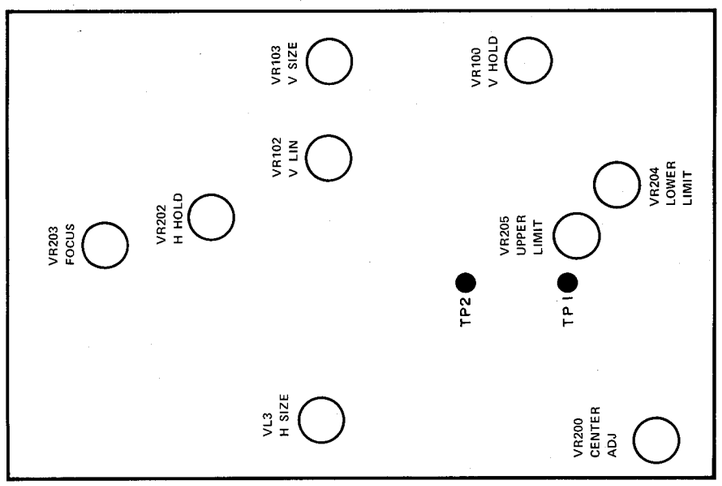
(j) Focus Adjustment

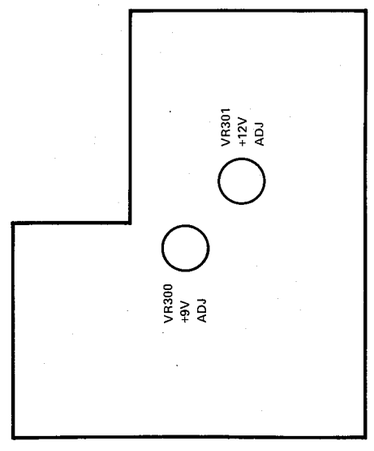
Adjust :	VR203 (FOCUS)	Deflection board
Observe :	Viewfinder	

- Aim the camera at the resolution chart.
- Adjust FOCUS VR203 for best resolution in the viewfinder.

LOCATION OF TEST POINTS AND ADJUSTINGCONTROLS
5" VIEWFINDER WV-VF37 — Component Side —







Steps denoted by shaded outlines do not have to be performed if only pick-up tubes are replaced.

2-3 Remote Control Unit (RCU) WV-RC32 Adjustment

- Disassemble the remote control unit (RCU) WV-RC32 while referring to 1-2 Remote Control Unit WV-RC32 on page 13.
- Refer to page 22 and 23 for the test points and adjusting controls.

(a) Connection and setting up for adjustment

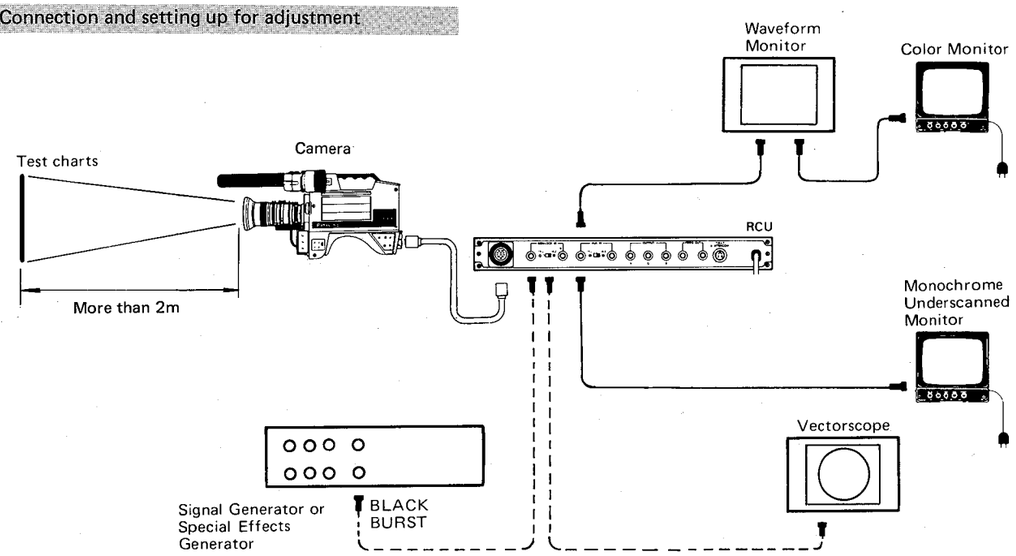


Fig. 2-3-1

Connection

- Connect the camera and the remote control unit (RCU) using a 15m 32p camera cable.
- Connect the VIDEO OUT connector on the RCU to the VIDEO IN connector of color monitor through the waveform monitor using a coaxial cable.
- Terminate the video input of color video monitor with 75 ohms.
- Connect the BLACK BURST OUT of special effects generator or signal generator to the GEN-LOCK IN connector of RCU using a coaxial cable and set the 75 ohm termination switch to 75 ohm position when instructed.

Position of controls and switches on the camera and RCU

(Camera)

Power Switch	VTR/RCU
Filter Wheel	1
High Gain Selection Switch	0 dB
Color Bar/Camera Selection Switch	CAMERA
Standby/Operate Selection Switch	OPERATE
Auto/Manual Centering Selection	Manual Switch
R-G/Y/B-G Selection Switch	Y
LEVEL IND ON/OFF SWITCH	OFF

(Lens)

Iris Control Selection Switch	MAN

(RCU)

Camera/Color Bar Selection Switch	BAR
Cable Length Compensation Switch	20m
Subcarrier Phase Coarse Switch	0°
Subcarrier Phase Fine Control	Fully-counter-clockwise
Horizontal Phase Control	Fully-counter-clockwise
Total Pedestal Control	Center detent

Set-up

- Turn ON the color camera for at least 30 minutes prior to adjustment.
- Distance between the camera and test chart should be more than 2 m.
- Light : 1400 lux incident.

Steps denoted by shaded outlines do not have to be performed if only pick-up tubes are replaced.

(b) +16V adjustment (Switching regulator board)

Test point :	Pin 1 of CN22
Adjust :	VR24 (+16V ADJ)

- Disconnect 32P camera cable from the Camera Head.
- Connect the digital voltmeter (DVM) probe between pin 1 of CN22 and ground.
- Adjust +16V ADJ VR24 on the switching regulator board for +16.0V±0.1V.
- Connect 32P camera cable to the Camera Head.

(c) +12V adjustment

Test point :	TP10
Adjust :	VR23 (+12V ADJ)

- Connect the digital voltmeter (DVM) probe between TP10 and ground.
- Adjust +12V ADV VR23 on the Main board for +12.0V±0.1V.

(d) Sync balance adjustment

Test point :	TP3
Adjust :	VR6 (SYNC BALANCE)

- Connect the BLACK BURST OUT of special effects generator or signal generator to the GEN-LOCK IN connector of RCU and set the 75 ohm termination switch to 75 ohm position.
- Connect the oscilloscope to TP3.
- Trigger the oscilloscope at H rate (Use TP8(HD), Mother board).
- Adjust SYNC BALANCE VR1 to cancel the sync signal. (Fig. 2-3-2)

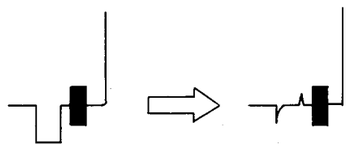


Fig. 2-3-2

(e) Burst gate adjustment

Test points :	TP1
	TP2
Adjust :	VR1 (BURST GATE)

- Keep the Black Burst signal connected as in the preceding step.
- Connect the oscilloscope to TP1 and TP2.

Steps denoted by shaded outlines do not have to be performed if only pick-up tubes are replaced.

- Trigger the oscilloscope at H rate (Use TP8(HD), Mother board).
- Expand the burst signal portion on the oscilloscope.
- Adjust BURST GATE VR1 so that the width of burst gate pulse at TP2 becomes 8.6μs. (Fig. 2-3-3)

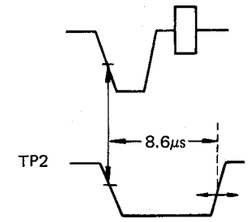


Fig. 2-3-3

(f) Black burst adjustment

Test point :	TP4
Adjusts :	VR2 (SC 90° PHASE)
	VR3 (SYNC LEVEL)
	VR4 (SC PHASE FINE CONTROL)
	VR5 (GEN-LOCK LEVEL)
	SW2 (SC PHASE FINE CONTROL)
Observe :	Vectorscope

- Change CN6 into CN8 from the Main board.
- Connect the vectorscope to the AUX connector and terminate the input of vectorscope with 75 ohms.
- Set SYNC LEVEL VR3 and GEN-LOCK LEVEL VR5 to their mechanical center.
- Set the SC PHASE COARSE SWITCH SW2 to the 0° position and turn SC PHASE FINE CONTROL VR4 fully counterclockwise.
- Turn the phase control of vectorscope so that the burst vector of even field positions at the B-Y (U) axis of vectorscope.
- Set the SC PHASE COARSE SWITCH SW2 to the 90° position.
- Adjust SC 90° PHASE VR3 so that the burst vector of even field coincides with the R-Y (V) axis on the vectorscope.
- Reset the COARSE SWITCH SW2 to the 0° position.
- Connect the oscilloscope to TP4.
- Trigger the oscilloscope at H rate (Use TP8(HD), Mother board).

- Adjust SYNC LEVEL VR3 so that the sync level is equal to the burst level.
- Turn SC PHASE FINE VR4 fully clockwise.
- Turn the phase control of vectorscope so that the burst vector aligns with the burst axis of vectorscope.
- Set the gain of vectorscope to 75%.
- Adjust GEN-LOCK LEVEL VR5 so that the amplitude of burst vector is 75% position.
- Change CN8 into CN6 from the Main board.

(g) Video output adjustment

Test points :	TP5
	VIDEO OUT
Adjusts :	VR7 (PAL OUTPUT GAIN PRESET)
	VR8 (PAL OUTPUT GAIN)
	CT1
	(PAL FREQUENCY RESPONSE)

- Keep the Camera/Color Bar Selection Switch set to The CAMERA position.
- Aim the camera at the gray scale chart and set the lens iris to F2.8.
- Trigger the oscilloscope at H rate (Use TP8(HD), Mother board).
- Adjust PAL OUTPUT GAIN PRESET VR7 so that the color bar signal level is 0.7Vp-p (Fig. 2-3-4).
- Aim the oscilloscope at TP5.
- Adjust PAL FREQUENCY RESPONSE CT1 so that the sync level and burst level are equal (Fig. 2-3-4).

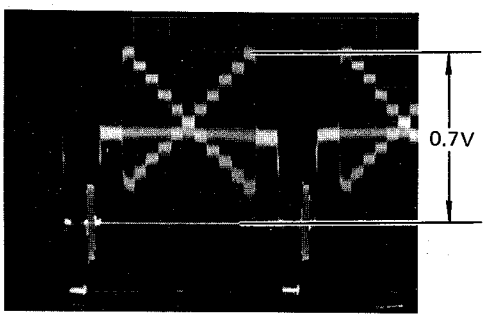


Fig. 2-3-4

- Remove the probe of the oscilloscope form TP5 to the terminated VIDEO OUT connector.
- Adjust PAL OUTPUT GAIN VR8 so that the color bar signal level is 0.7Vp-p (Fig. 2-3-5).

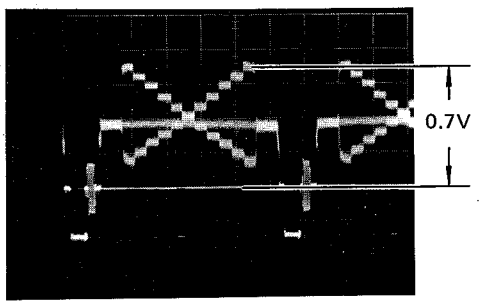


Fig. 2-3-5

Steps denoted by shaded outlines do not have to be performed if only pick-up tubes are replaced.

(h) Green output adjustment

Test points :	TP9
	G OUT
Adjusts :	VR14 (G OUTPUT GAIN PRESET)
	VR15 (G OUTPUT GAIN)
	CT4
	(G FREQUENCY RESPONSE)

- Keep the Camera/Color Bar Selection Switch to the CAMERA position.
- Aim the camera at the gray scale chart and set the lens iris to F2.8.
- Connect the oscilloscope to TP9.
- Trigger the oscilloscope at H rate (Use TP8(HD), Mother board).
- Adjust G OUTPUT GAIN PRESET VR14 so that the green signal level is 0.7Vp-p (Fig. 2-3-6).

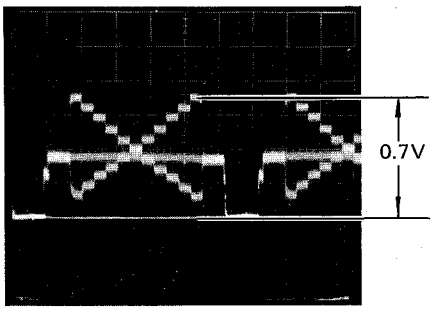


Fig. 2-3-6

- Cap on the lens or set the filter wheel to the position 4.
- Disconnect the CN5 from Main board.
- Connect the jumper wire between C18 (+) side and C66 (+) side.
- Adjust G FREQUENCY RESPONSE CT4 so that the sync and burst levels are equal. (Fig. 2-3-7)

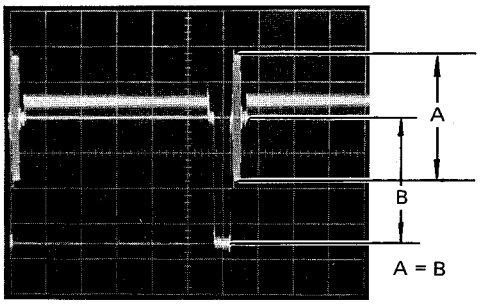


Fig. 2-3-7

- Remove the jumper wire.
- Connect the CN5 to Main board.
- Remove the lens cap or set the filter wheel to the position 1.
- Remove the probe of oscilloscope from TP9 to the terminated G OUT connector.
- Adjust G OUTPUT GAIN VR15 so that the green signal level is 0.7Vp-p.

(i) Red output adjustment

Test points :	TP7
	R OUT
Adjusts :	VR10 (R OUTPUT GAIN PRESET)
	VR11 (R OUTPUT GAIN)
	CT2
	(R FREQUENCY RESPONSE)

- Keep the Camera/Color Bar Selection Switch set to the CAMERA position.
- Aim the camera at the gray scale chart and set the lens iris to F2.8.
- Connect the oscilloscope to TP7.
- Trigger the oscilloscope at H rate (Use TP8 (HD) Mother board)
- Adjust R OUTPUT GAIN PRESET VR10 so that the red signal level is 0.7Vp-p as in the case of G output adjustment.
- Cap on the lens or set the filter wheel to the position 4.
- Disconnect the CN3 from Main board.
- Connect the jumper wire between C18 (+) side and C36 (+) side.
- Adjust R FREQUENCY RESPONSE CT2 so that the sync and burst levels are equal as in the case of G output adjustment.
- Remove the jumper wire.
- Connect the CN3 to Main board.
- Remove the lens cap or set the filter wheel to the position 1.
- Remove the probe of oscilloscope from TP6 and connect it to the terminated R OUT connector.
- Adjust R OUTPUT GAIN VR11 so that the red signal level is 0.7Vp-p as in the case of G output adjustment.

(j) Blue output adjustment

Test points :	TP8
	B OUT
Adjusts :	VR12 (B OUTPUT GAIN PRESET)
	VR13 (B OUTPUT GAIN)
	CT3
	(B FREQUENCY RESPONSE)

- Keep the Camera/Color Bar Selection Switch set to the CAMERA position.
- Aim the camera at the gray scale chart and set the lens iris to F2.8.
- Connect the oscilloscope to TP8.
- Trigger the oscilloscope at H rate (Use TP8(HD), Mother board).

Steps denoted by shaded outlines do not have to be performed if only pick-up tubes are replaced.

- Adjust B OUTPUT GAIN PRESET VR12 so that the blue signal level is 0.7Vp-p as in the case of G output adjustment.
- Cap on the lens or set the filter wheel to the position 4.
- Disconnect the CN4 from the Main board.
- Connect the jumper wire between C18 (+) side and C51 (+) side.
- Adjust B FREQUENCY RESPONSE CT3 so that the sync and burst levels are equal as in the case of G output adjustment.
- Remove the jumper wire.
- Connect the CN4 to Main board.
- Remove the lens cap or set the filter wheel to the position 1.
- Remove the probe of oscilloscope from TP8 and connect it to the terminated B OUT connector.
- Adjust B OUTPUT GAIN VR13 so that the blue signal level is 0.7Vp-p as in the case of G output adjustment.

(k) AUX gain adjustment

Test points :	TP6
	VIDEO OUT
Adjust :	VR9 (AUX GAIN)

- Keep the Camera/Color Bar Selection Switch set to the CAMERA position.
- Aim the camera at the gray scale chart and set the lens iris to F2.8.
- Connect the VIDEO OUT connector and AUX IN connector on the rear of RCU using a coaxial cable.
- Set the AUX input termination switch to the 75 ohms position.
- Connect the oscilloscope to the TP6 and the VIDEO OUT connector.
- Trigger the oscilloscope at H rate (Use TP8(HD), Mother board).
- Adjust AUX GAIN VR9 so that the signal levels especially the sync signals are equal.

(n) Total pedestal adjustment

Test points :	Pin 5 of CN14
Adjusts :	VR19 (TOTAL PEDESTAL PRESET)
	VR20 (TOTAL PEDESTAL)

- Turn TOTAL PEDESTAL VR20 on the front of RCU to mechanical center position.
- Connect the digital voltmeter (DVM) probe to pin 5 of CN14.
- Adjust TOTAL PEDESTAL PRESET VR19 for +7.0V.

Steps denoted by shaded outlines do not have to be performed if only pick-up tubes are replaced.

(l) Horizontal phase adjustment

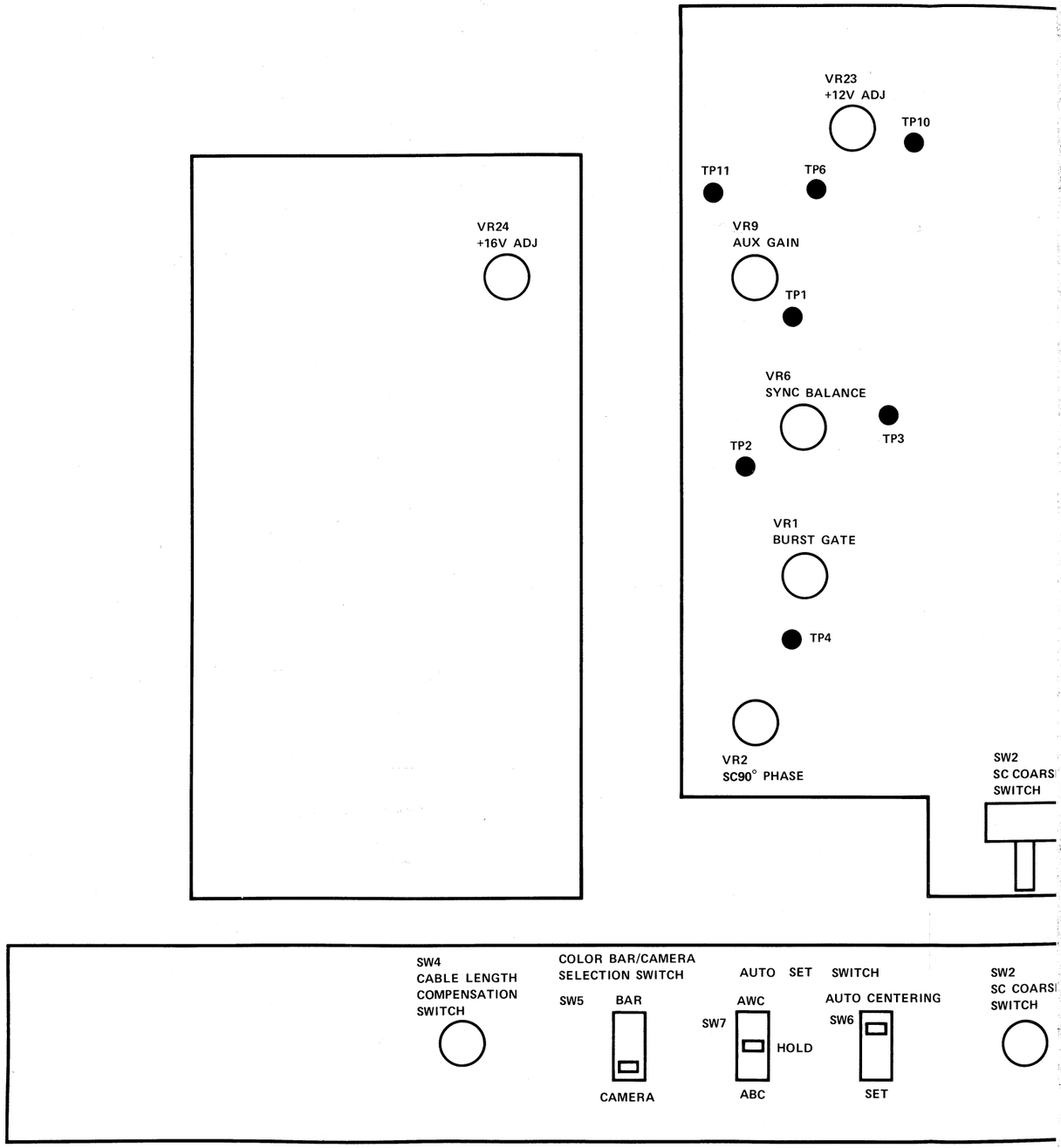
Test point : Pin 2 of CN14
Adjusts : VR16 (H PHASE PRESET)
VR17 (H PHASE)

- Turn H PHASE VR17 on the front of RCU fully clockwise.
- Connect the digital voltmeter (DVM) probe to pin 2 of CN14.
- Adjust H PHASE PRESET VR16 for +5.0V.

(m) Iris preset adjustment

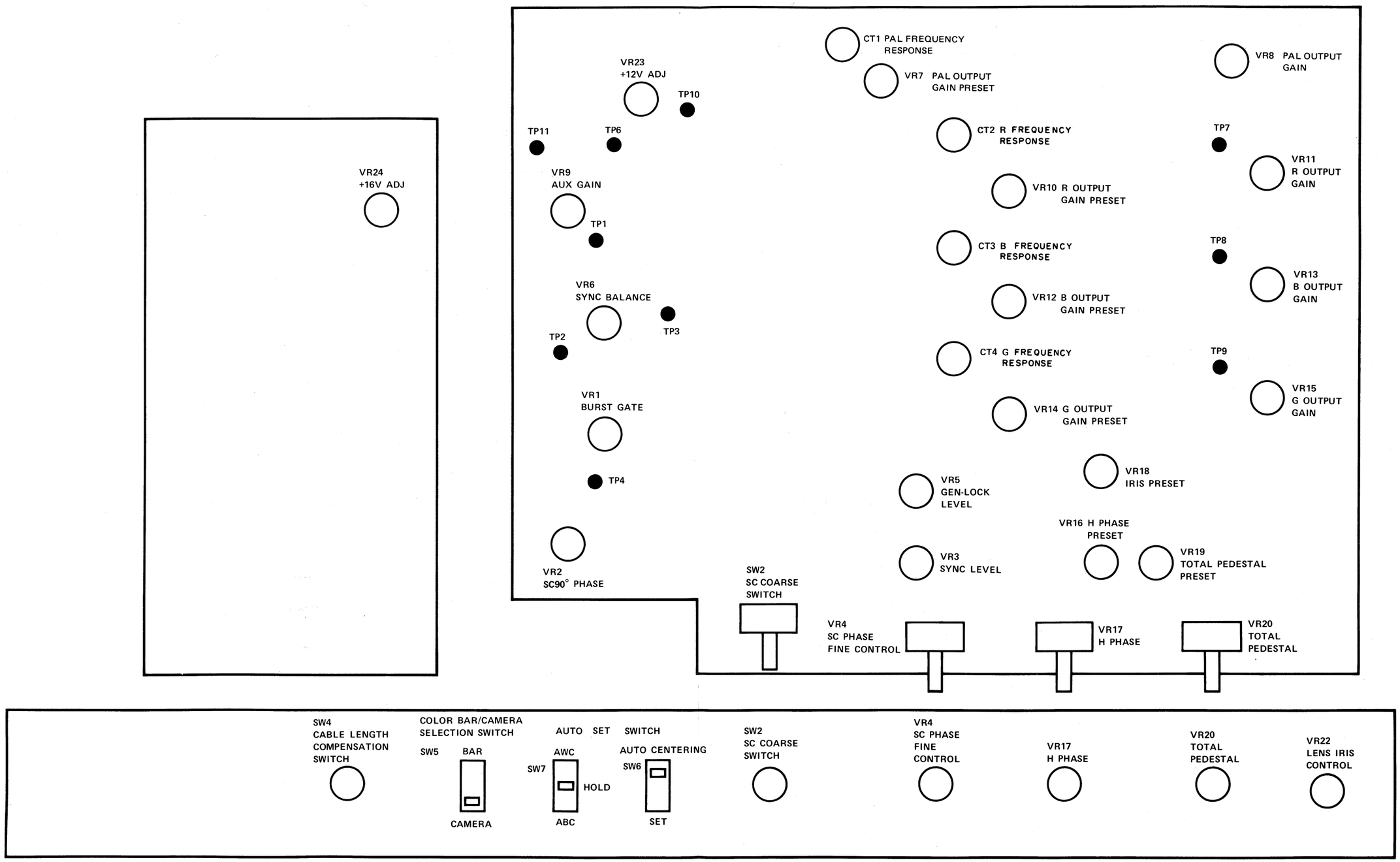
Test point : Pin 1 of CN14
Adjust : VR18 (IRIS PRESET)

- Turn LENS IRIS CONTROL VR22 on the front of RCU fully counterclockwise and stop it just before switched to the AUTO position.
- Connect the digital voltmeter (DVM) probe to pin 1 of CN14.
- Adjust IRIS PRESET VR18 for +1.8V.

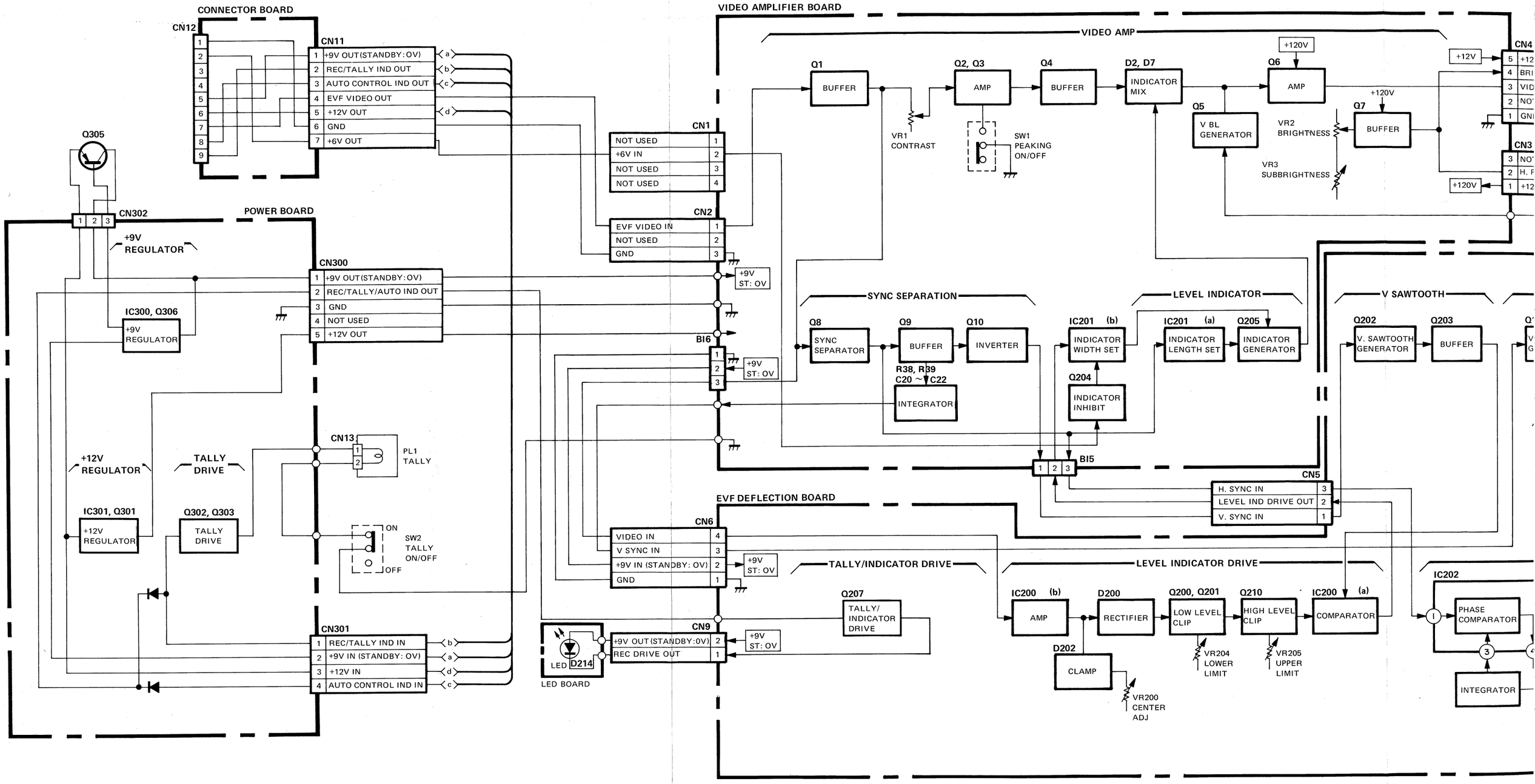


not have to be
placed.

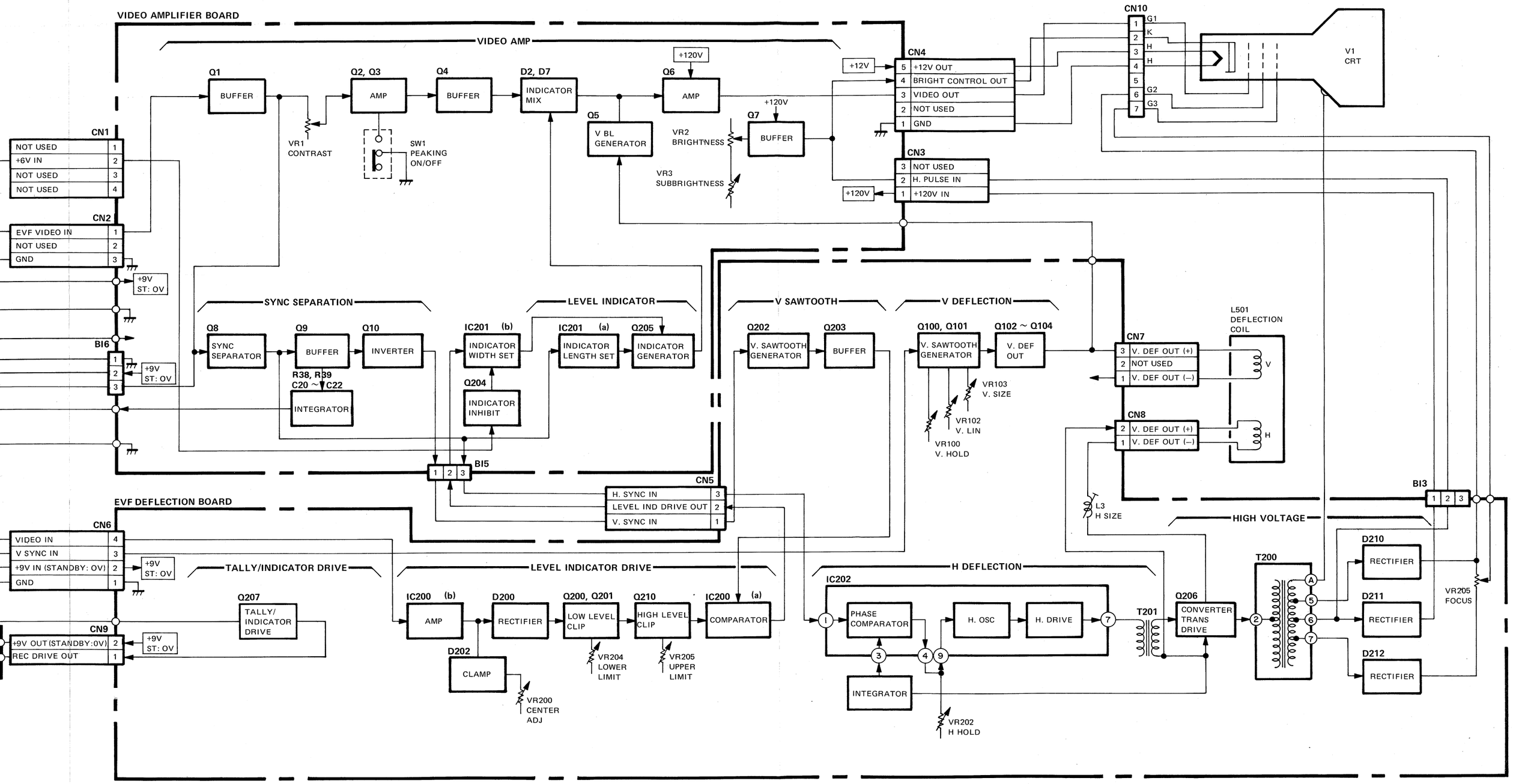
LOCATION OF TEST POINTS AND ADJUSTING CONTROLS WV-RC32



BLOCK DIAGRAM OF 5" VIEWFINDER (WV-VF37)

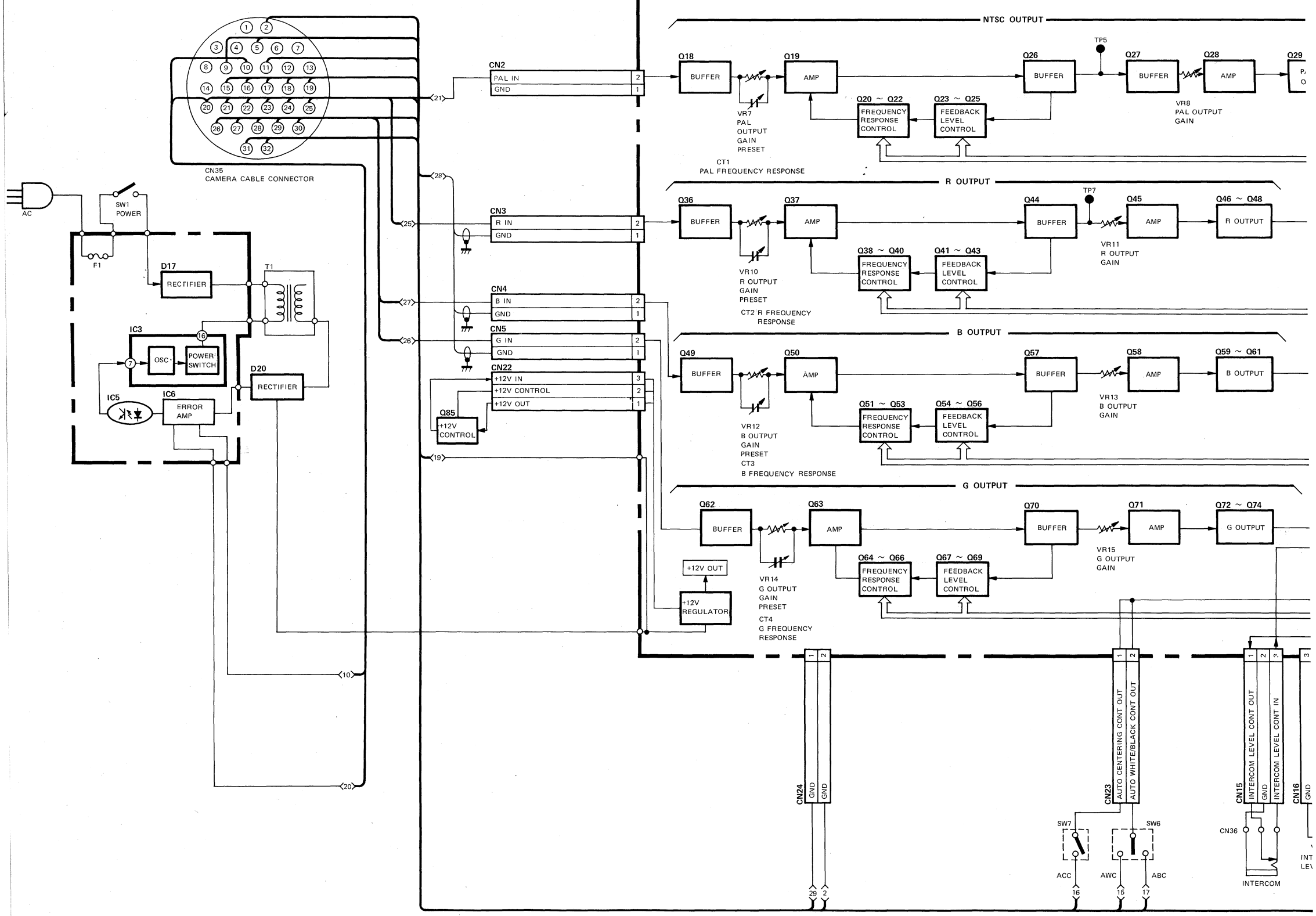


BLOCK DIAGRAM OF 5" VIEWFINDER (WV-VF37)

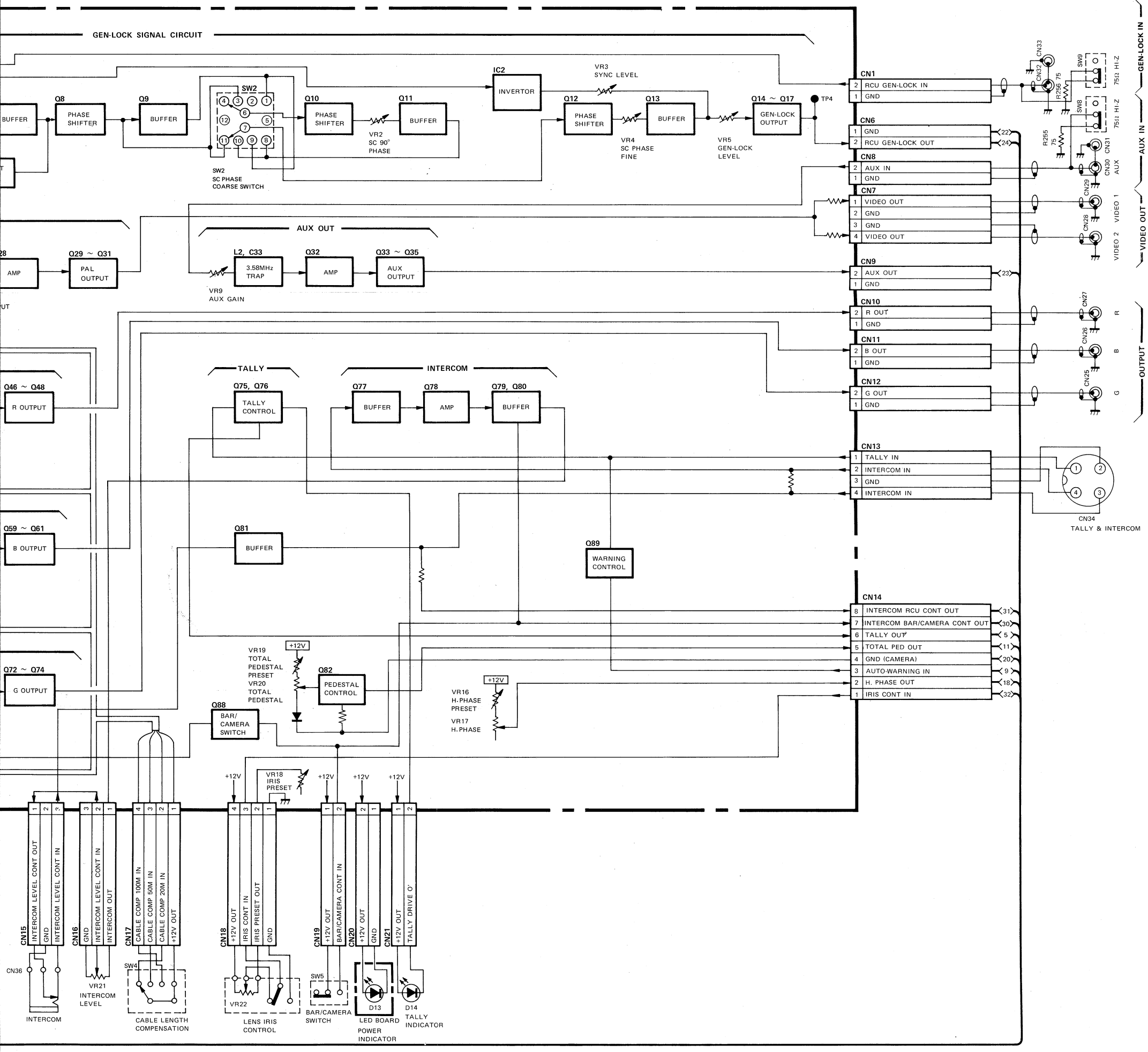


BLOCK DIAGRAM OF REMOTE CON

1	NOT USED	17	RCU AUTO BLACK CONTROL OUT
2	GND	18	H. PHASE OUT
3	NOT USED	19	+12V OUT
4	NOT USED	20	GND (CAMERA)
5	TALLY OUT	21	PAL IN
6	NOT USED	22	GND
7	NOT USED	23	AUX OUT
8	NOT USED	24	RCU GEN-LOCK OUT
9	AUTO-WARNING OUT	25	R IN
10	+12V RETURN IN	26	G IN
11	TOTAL PED OUT	27	B IN
12	NOT USED	28	GND
13	NOT USED	29	GND
14	NOT USED	30	INTERCOM BAR/CAMERA CONT OUT
15	RCU AUTO WHITE CONTROL OUT	31	INTERCOM RCU CONT OUT
16	RCU AUTO CENTERING CONTROL OUT	32	IRIS CONT IN

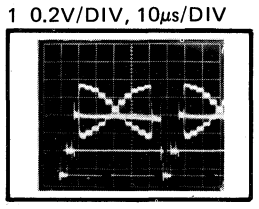


E CONTROL UNIT (WV-RC32)

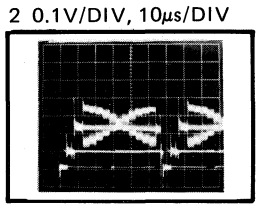


SCHEMATIC DIAGRAM OF 5" V

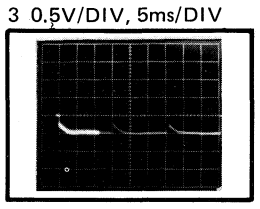
1 0.2V/DIV, 10μs/DIV



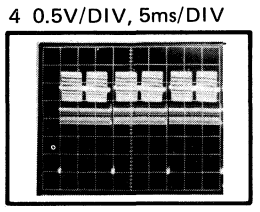
2 0.1V/DIV, 10μs/DIV



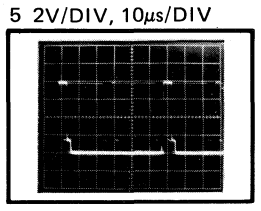
3 0.5V/DIV, 5ms/DIV



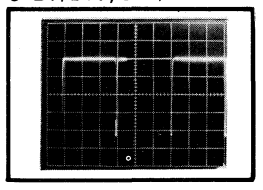
4 0.5V/DIV, 5ms/DIV



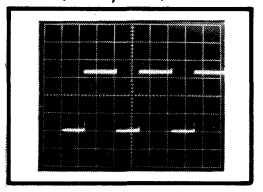
5 2V/DIV, 10μs/DIV



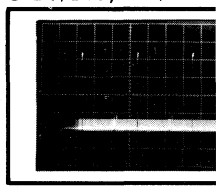
6 2V/DIV, 5ms/DIV



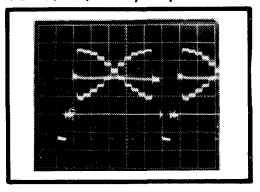
7 2V/DIV, 5ms/DIV



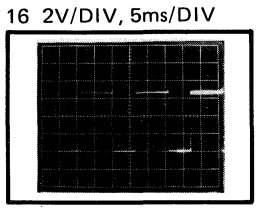
8 2V/DIV, 5ms/DIV



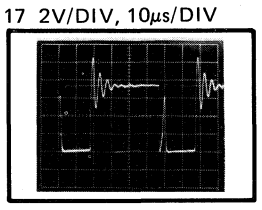
15 0.2V/DIV, 10μs/DIV



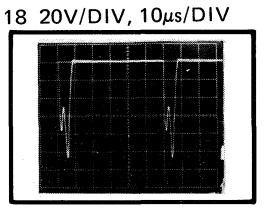
16 2V/DIV, 5ms/DIV



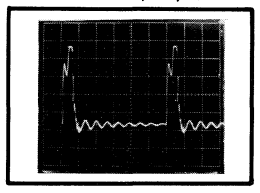
17 2V/DIV, 10μs/DIV



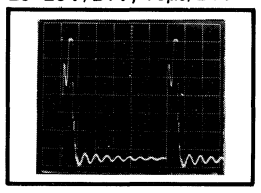
18 20V/DIV, 10μs/DIV



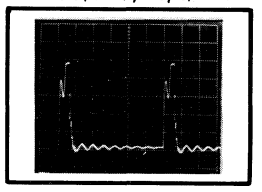
19 100V/DIV, 10μs/DIV

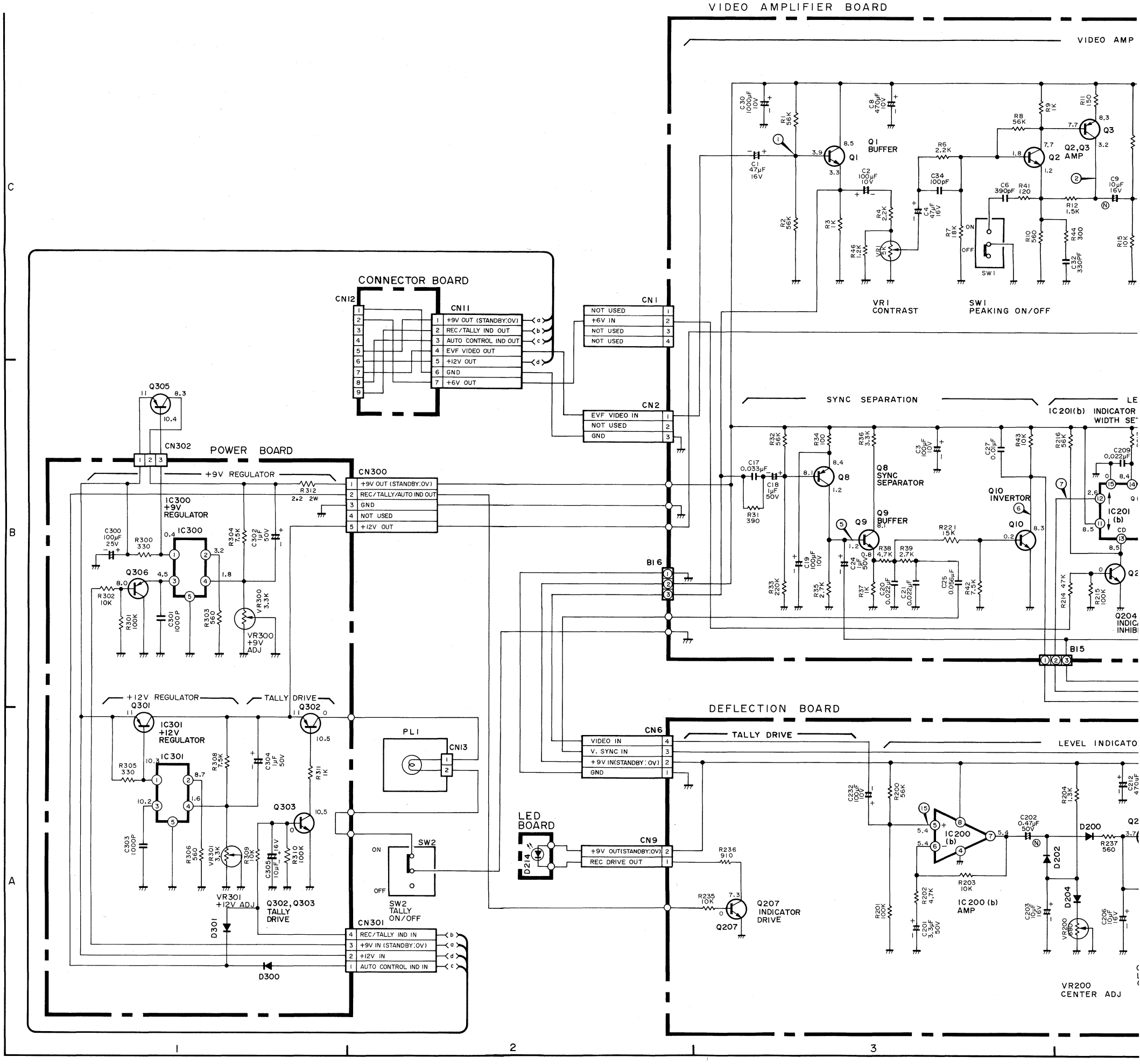


20 20V/DIV, 10μs/DIV



21 20V/DIV, 10μs/DIV



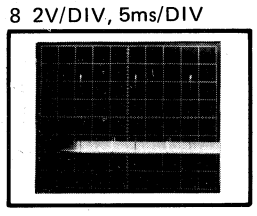


DEFLECTION BOARD

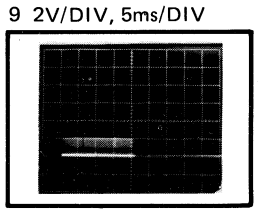
IC200	YHSNJM4558D	A3, A4	Q206	2SD772B	A6	D208	YUDU06C	A6	IC201	TC4538BP	B4
IC202	AN5750	A5	Q207	2SD1205-R	A3	D209	OA91	A6			
			Q210	2SA838-BC	A4	D210	YUDERB24-04C	A6	Q1	2SD636-QRS	C3
Q100	2SD636-QRS	B5				D211	YUDERB24-04C	A6	Q2	2SD636-QRS	C3
Q101	2SB641-QRS	B5	D100	MA161	B5	D212	YUDERB24-04C	A6	Q3	2SB641-QRS	C4
Q102	2SD636-QRS	B5	D101	MA161	B5	D213	YUDERB24-04C	A6	Q4	2SD636-QRS	C4
Q103	2SC1226-QR	B6	D102	MA165	B5	D214	LN23L	A2	Q5	2SC1216-FS	C4
Q104	2SA684-QR	B6	D200	MA165	A4				Q6	2SC2258QRS	C4
Q200	2SD636-QRS	A4	D202	MA165	A3				Q7	2SA1018A	C5
Q201	2SD636-QRS	A4	D204	MA165	A4				Q8	2SB641-QRS	B3
Q202	2SB641-QRS	B4	D206	YUDX068	A5				Q9	2SD636-QRS	B3
Q203	2SD636-QRS	B5	D207	YUDERB24-04C	A6				Q10	2SD661-TU	B3

OF 5" VIEWFINDER (WV-VF37)

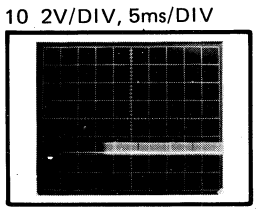
8 2V/DIV, 5ms/DIV



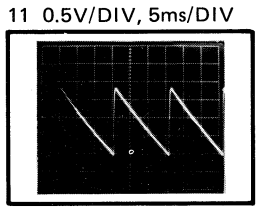
9 2V/DIV, 5ms/DIV



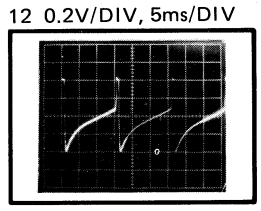
10 2V/DIV, 5ms/DIV



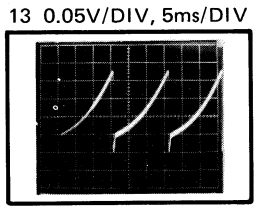
11 0.5V/DIV, 5ms/DIV



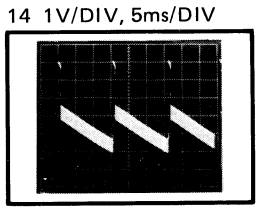
12 0.2V/DIV, 5ms/DIV

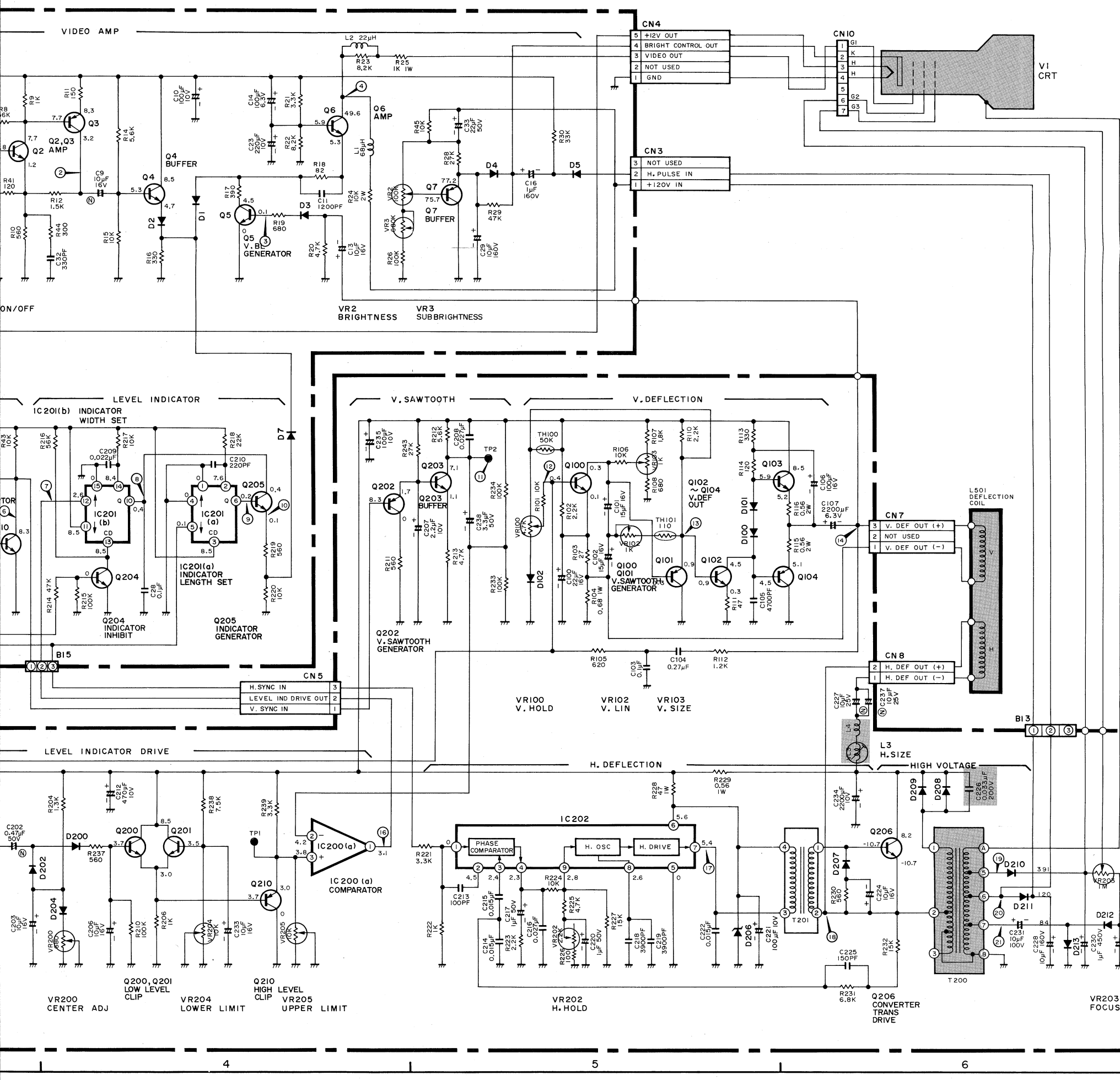


13 0.05V/DIV, 5ms/DIV



14 1V/DIV, 5ms/DIV





IFIER BOARD

BP	B4	Q204	2SD636-QRS	B4
		Q205	2SD661-TU	B4
-QRS	C3			
-QRS	C3	D1	MA161	C4
-QRS	C4	D2	MA161	C4
-QRS	C4	D3	MA162	C4
6-FS	C4	D4	YUDERB24-04C	C5
3QRS	C4	D5	OA91	C5
8A	C5	D7	MA165	B4
-QRS	B3			
-QRS	B3			
-TU	B3			

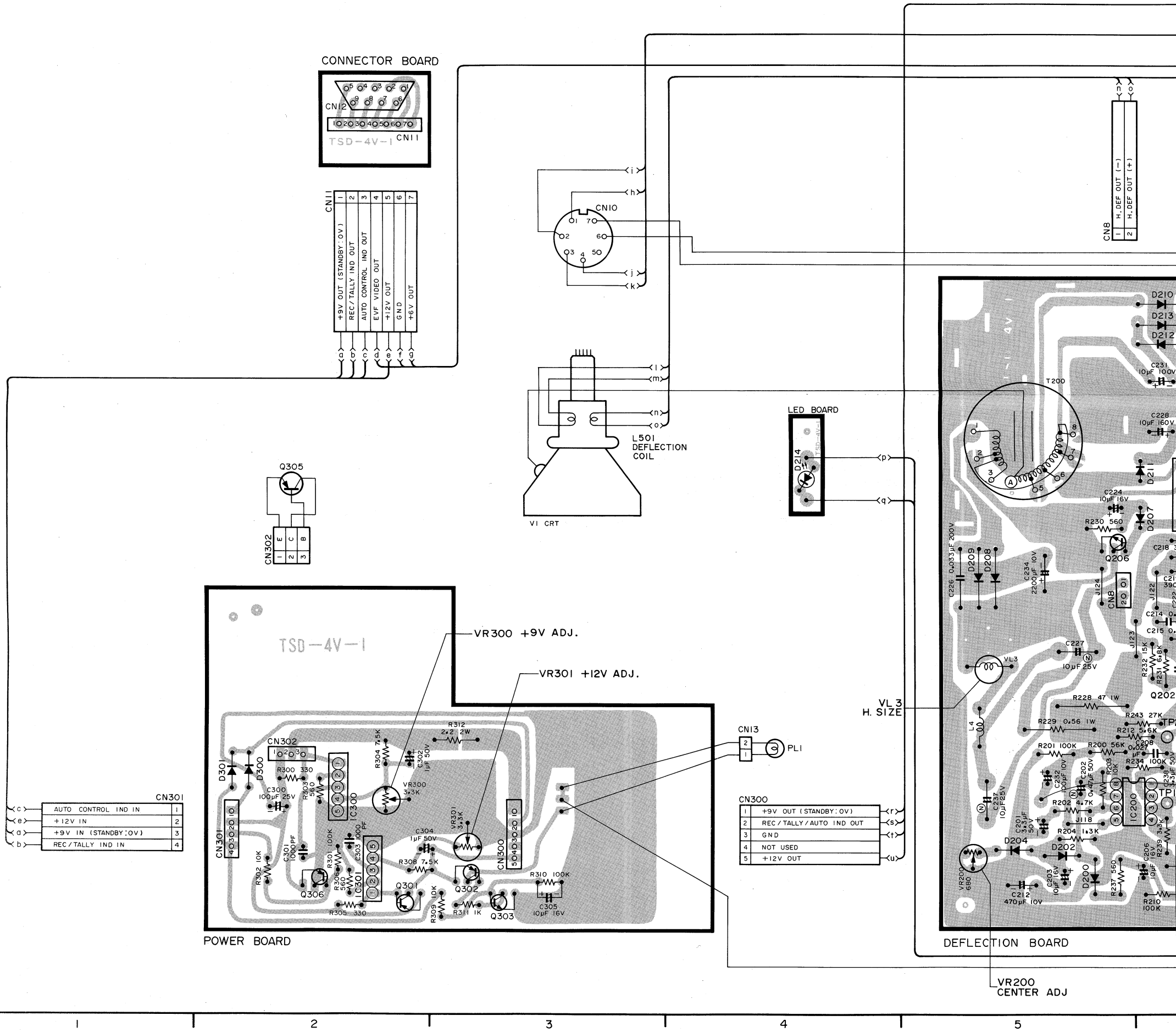
POWER BOARD

IC300	YFM5231L	B1
IC301	YFM5231L	A1
Q301	2SA699-QR	A1
Q302	2SB793-RS	A1
Q303	2SD1205-R	A1
Q305	2SA1061P	B1
Q306	2SB641-QRS	B1
D300	MA165	A1
D301	MA165	A1

PRODUCT SAFETY NOTE

The shaded area on this schematic diagram incorporates special features important for protection from X-Radiation, fire and electrical shock hazards. When servicing it is essential that only manufacturer's specified parts be used for the critical components in the shaded areas of the schematic.

CONDUCTOR VIEW OF 5" VIEWF



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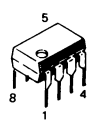

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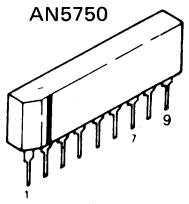

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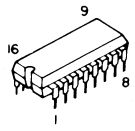

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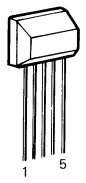
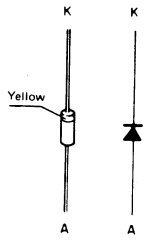


OA91



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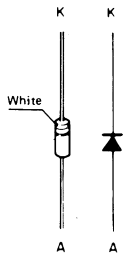

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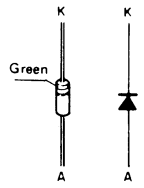

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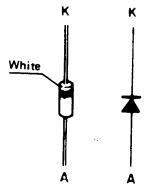
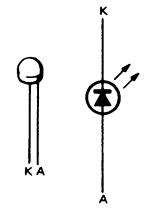
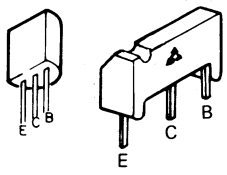


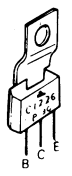
LN23L



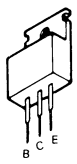
2SA684-QR
2SA838-BC
2SD661-TU
2SB793-QR
2SB641-RS
2SD636-RS
2SD1205-R



2SC1226-QR
2SA699-QR



2SD772B
2SA1061P



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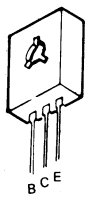

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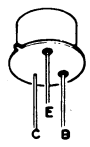
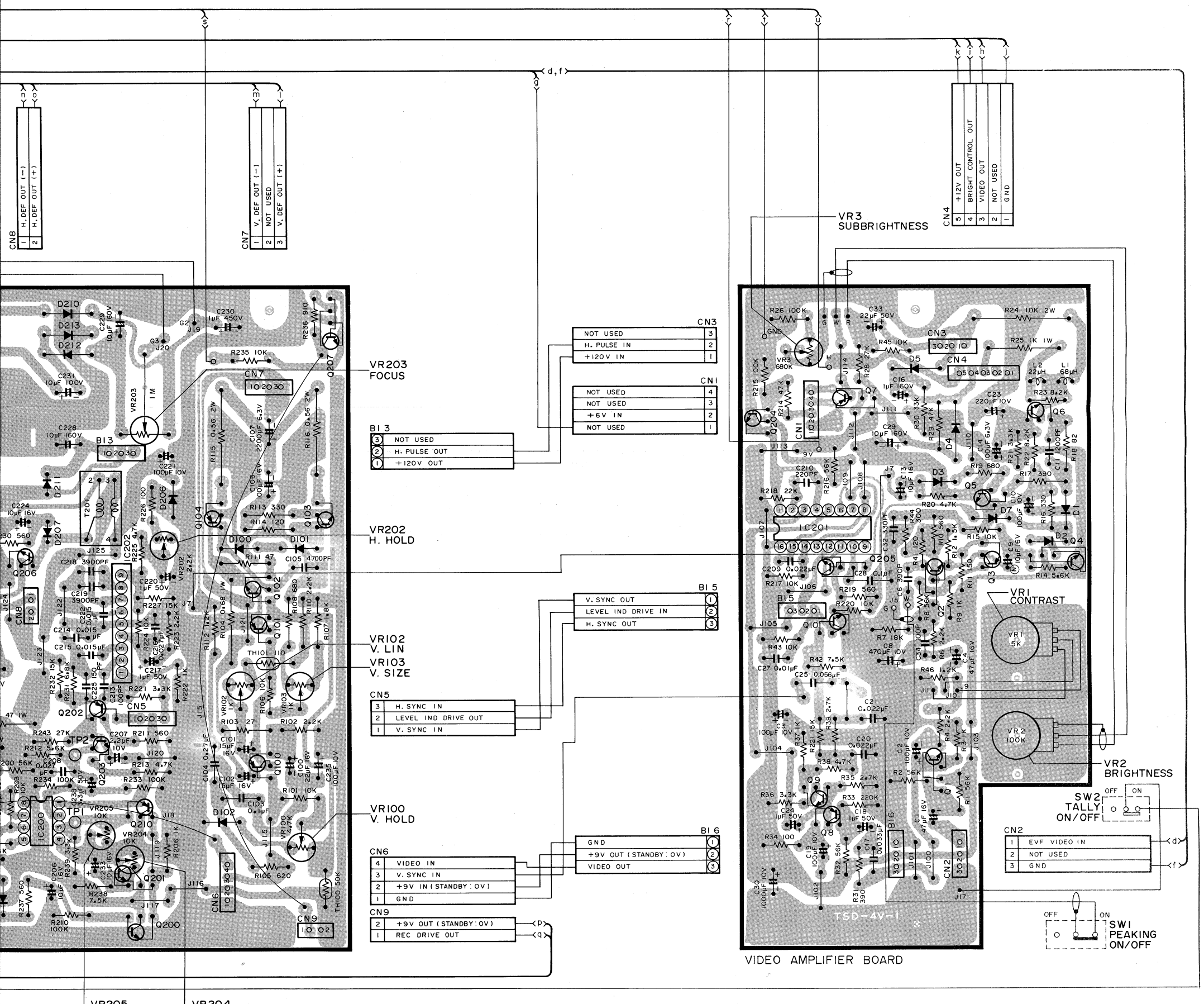


DEFLECTI

IC200	YHS
IC202	AN5
Q100	2SD6
Q101	2SB6
Q102	2SD6
Q103	2SC1
Q104	2SA6
Q200	2SD6
Q201	2SD6
Q202	2SB6
Q203	2SD6
Q206	2SD7
Q207	2SD1
Q210	2SA8

VIEWFINDER (WV-VF37)



DEFLECTION BOARD

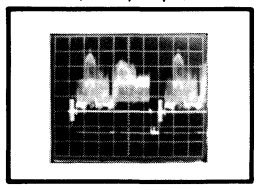
IC200	YHSNJM4558D	A5, A6	D100	MA161	C6	IC201	TC4538BP	C9
IC202	AN5750	B6	D101	MA161	C7			
			D102	MA165	A6	Q1	2SD636-QRS	B9
Q100	2SD636-QRS	B6	D200	MA165	A5	Q2	2SD636-QRS	B9
Q101	2SB641-QRS	B6	D202	MA165	A5	Q3	2SB641-QRS	C9
Q102	2SD636-QRS	B6	D204	MA165	A5	Q4	2SD636-QRS	C10
Q103	2SC1226-QR	C7	D206	YUDX068	C6	Q5	2SC1216-FS	C9
Q104	2SA684-QR	C6	D207	YUDERB24-04C	C6	Q6	2SC2258QRS	C10
Q200	2SD636-QRS	A6	D208	YUDU06C	B5	Q7	2SA1018A	C9
Q201	2SD636-QRS	A6	D209	OA91	B5	Q8	2SB641-QRS	A9
Q202	2SB641-QRS	B6	D210	YUDERB24-04C	D6	Q9	2SD636-QRS	A9
Q203	2SD636-QRS	B6	D211	YUDERB24-04C	C6	Q10	2SD661-TU	B9
Q206	2SD772B	B5	D212	YUDERB24-04C	C6	Q204	2SD636-QRS	C8
Q207	2SD1205-R	C7	D213	YUDERB24-04C	C6	Q205	2SD661-TU	C9
Q210	2SA838-BC	A6	D214	LN23L	C9			
						D1	MA161	C10
						D2	MA161	C10
						D3	MA162	C9
						D4	YUDERB24-04C	C9
						D5	OA91	C9
						D7	MA165	C9

POWER BOARD

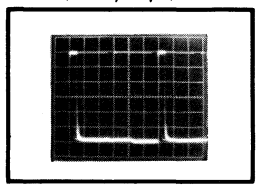
IC300	YFM5231L	A2
IC301	YFM5231L	A2, B2
Q301	2SA699-QR	A2
Q302	2SB793-RS	A3
Q303	2SD1205-R	A3
Q305	2SA1061P	C2
Q306	2SB641-QRS	A2
D300	MA165	B2
D301	MA165	B2

SCHEMATIC DIAGRAM OF REMO

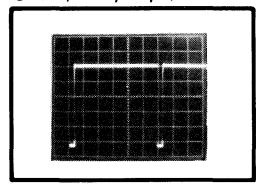
1 0.2V/DIV, 10μs/DIV



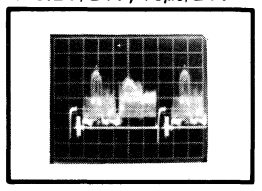
2 2V/DIV, 10μs/DIV



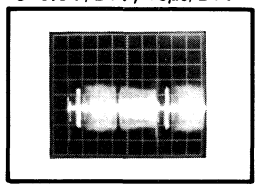
3 2V/DIV, 10μs/DIV



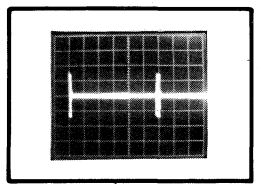
4 0.2V/DIV, 10μs/DIV



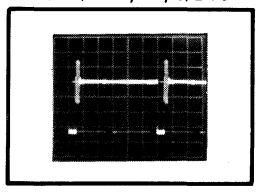
5 0.5V/DIV, 10μs/DIV



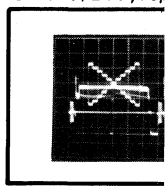
6 0.2V/DIV, 10μs/DIV



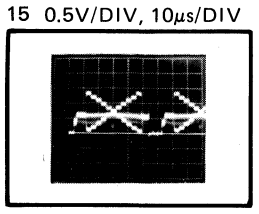
7 0.1V/DIV, 10μs/DIV



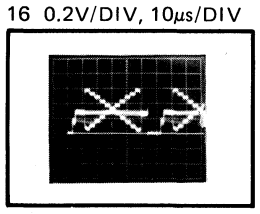
8 0.2V/DIV,10μ



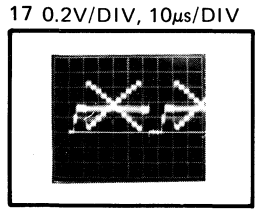
15 0.5V/DIV, 10μs/DIV



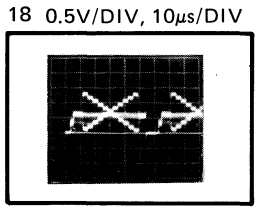
16 0.2V/DIV, 10μs/DIV



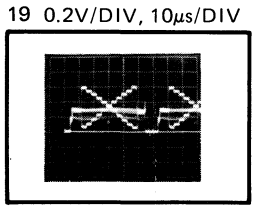
17 0.2V/DIV, 10μs/DIV



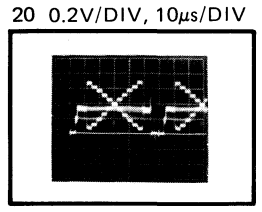
18 0.5V/DIV, 10μs/DIV



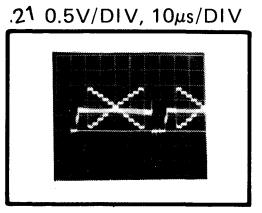
19 0.2V/DIV, 10μs/DIV

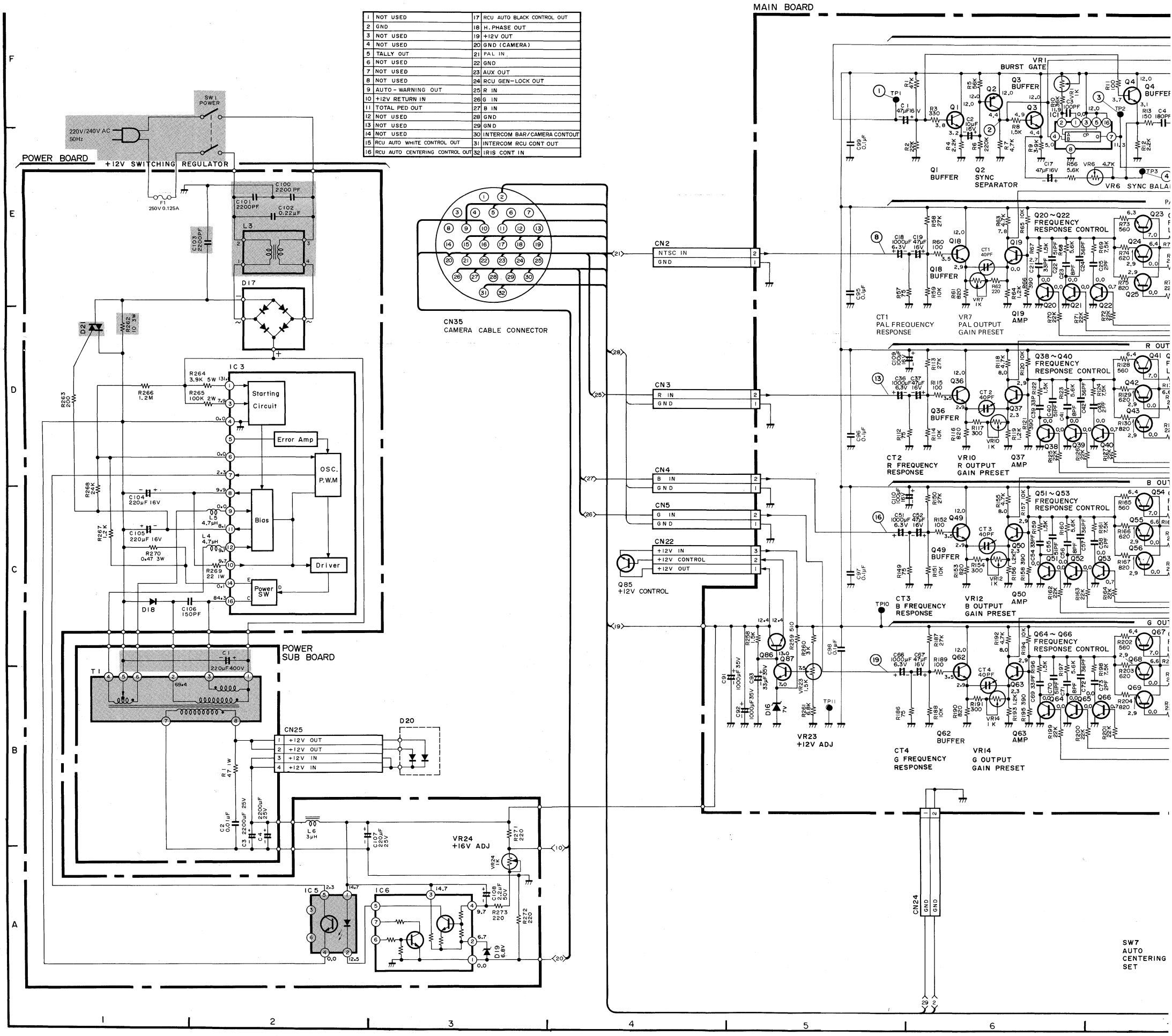


20 0.2V/DIV, 10μs/DIV



21 0.5V/DIV, 10μs/DIV



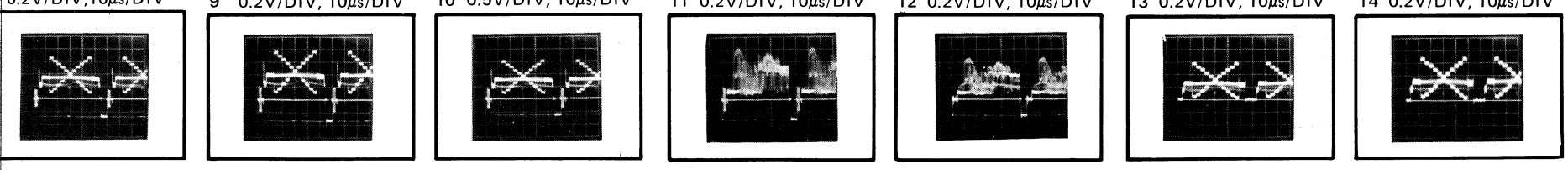


1	NOT USED	17	RCU AUTO BLACK CONTROL OUT
2	GND	18	H. PHASE OUT
3	NOT USED	19	+12V OUT
4	NOT USED	20	GND (CAMERA)
5	TALLY OUT	21	PAL IN
6	NOT USED	22	GND
7	NOT USED	23	AUX OUT
8	NOT USED	24	RCU GEN-LOCK OUT
9	AUTO - WARNING OUT	25	R IN
10	+12V RETURN IN	26	G IN
11	TOTAL PED OUT	27	B IN
12	NOT USED	28	GND
13	NOT USED	29	GND
14	NOT USED	30	INTERCOM BAR/CAMERA CONTOUT
15	RCU AUTO WHITE CONTROL OUT	31	INTERCOM RCU CONT OUT
16	RCU AUTO CENTERING CONTROL OUT	32	IRIS CONT IN

PCB1 MAIN BOARD

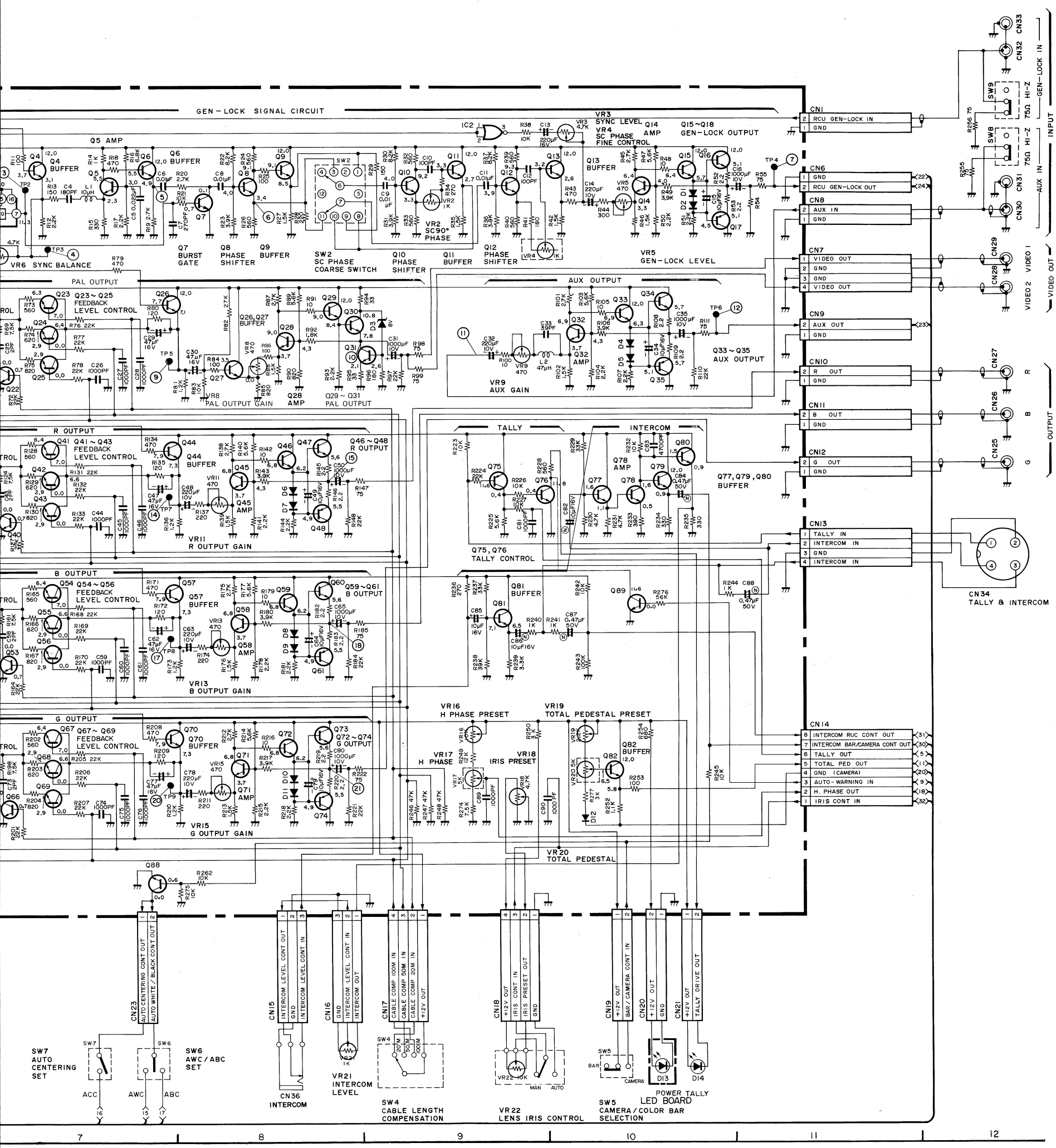
IC1	YWHD14538BP	F6,F7	Q10	2SD636-QRS	F9	Q22	2SD636-QRS	E7	Q34	2SD973-QRS	E10	Q46	2SD636-QRS	D8	Q58	2S
IC2	YWHD14001BP	F9	Q11	2SD636-QRS	F9	Q23	2SD636-QRS	E7	Q35	2SB793-QR	E10	Q47	2SD973-QRS	D8	Q59	2S
			Q12	2SD636-QRS	F9	Q24	2SD636-QRS	E7	Q36	2SD636-QRS	D6	Q48	2SB793-QR	D8	Q60	2S
Q1	2SD636-QRS	F6	Q13	2SD636-QRS	F10	Q25	2SD636-QRS	E7	Q37	2SD636-QRS	D6	Q49	2SD636-QRS	C6	Q61	2S
Q2	2SA1254-BC	F6	Q14	2SD636-QRS	F10	Q26	2SD636-QRS	E8	Q38	2SD636-QRS	D6	Q50	2SD636-QRS	D6	Q62	2S
Q3	2SD636-QRS	F6	Q15	2SD636-QRS	F11	Q27	2SD636-QRS	E8	Q39	2SD636-QRS	D6	Q51	2SD636-QRS	C6	Q63	2S
Q4	2SD636-QRS	F7	Q16	2SD973-QRS	F11	Q28	2SD636-QRS	E8	Q40	2SD636-QRS	D7	Q52	2SD636-QRS	C6	Q64	2S
Q5	2SD636-QRS	F7	Q17	2SB793-QR	F11	Q29	2SD636-QRS	E8	Q41	2SD636-QRS	D7	Q53	2SD636-QRS	C7	Q65	2S
Q6	2SD636-QRS	F7	Q18	2SD636-QRS	E6	Q30	2SD638-QRS	E9	Q42	2SD636-QRS	D7	Q54	2SD636-QRS	C7	Q66	2S
Q7	2SC1216F	F8	Q19	2SD636-QRS	E6	Q31	2SD638-QRS	E9	Q43	2SD636-QRS	D7	Q55	2SD636-QRS	C7	Q67	2S
Q8	2SD636-QRS	F8	Q20	2SD636-QRS	E6	Q32	2SD636-QRS	E10	Q44	2SD636-QRS	D8	Q56	2SD636-QRS	C7	Q68	2S
Q9	2SD636-QRS	F8	Q21	2SD636-QRS	E6	Q33	2SD636-QRS	E10	Q45	2SD636-QRS	D8	Q57	2SD636-QRS	C8	Q69	2S

REMOTE CONTROL UNIT (WV-RC32)



PRODUCT SAFETY NOTE

The shaded area on this schematic diagram incorporates special features important for protection from X-Radiation, fire and electrical shock hazards. When servicing it is essential that only manufacturer's specified parts be used for the critical components in the shaded areas of the schematic.


GEN-LOCK SIGNAL CIRCUIT
Q5 AMP
Q4 BUFFER
Q6 BUFFER
Q7 BURST GATE
Q8 PHASE SHIFTER
Q9 BUFFER
SW2 SC PHASE COARSE SWITCH
Q10 PHASE SHIFTER
Q11 BUFFER
Q12 PHASE SHIFTER
VR2 SC90° PHASE
VR3 SYNC LEVEL
VR4 SC PHASE FINE CONTROL
Q13 BUFFER
Q14 AMP
Q15~Q18 GEN-LOCK OUTPUT
VR5 GEN-LOCK LEVEL
VR6 SYNC BALANCE
PAL OUTPUT
Q23 Q23~Q25 FEEDBACK LEVEL CONTROL
Q26,Q27 BUFFER
Q28 AMP
Q29~Q31 PAL OUTPUT
VR8 PAL OUTPUT GAIN
AUX OUTPUT
Q33~Q35 AUX OUTPUT
VR9 AUX GAIN
R OUTPUT
Q41 Q41~Q43 FEEDBACK LEVEL CONTROL
Q44 BUFFER
Q45 AMP
Q46~Q48 R OUTPUT
VR11 R OUTPUT GAIN
B OUTPUT
Q54 Q54~Q56 FEEDBACK LEVEL CONTROL
Q57 BUFFER
Q58 AMP
Q59~Q61 B OUTPUT
VR13 B OUTPUT GAIN
G OUTPUT
Q67 Q67~Q69 FEEDBACK LEVEL CONTROL
Q70 BUFFER
Q71 AMP
Q72~Q74 G OUTPUT
VR15 G OUTPUT GAIN
TALLY
INTERCOM
Q75,Q76 TALLY CONTROL
Q77,Q79,Q80 BUFFER
Q78 AMP
Q81 BUFFER
VR16 H PHASE PRESET
VR17 H PHASE
VR18 IRIS PRESET
VR19 TOTAL PEDESTAL PRESET
Q82 BUFFER
VR20 TOTAL PEDESTAL
Q88
CN1 RCU GEN-LOCK IN / GND
CN6 GND / RCU GEN-LOCK OUT
CN8 AUX IN / GND
CN7 VIDEO OUT / GND / GND / VIDEO OUT
CN9 AUX OUT / GND
CN10 R OUT / GND
CN11 B OUT / GND
CN12 G OUT / GND
CN13 TALLY IN / INTERCOM IN / GND / INTERCOM IN
CN34 TALLY & INTERCOM
CN14 INTERCOM RUC CONT OUT / INTERCOM BAR/CAMERA CONT OUT / TALLY OUT / TOTAL PED OUT / GND (CAMERA) / AUTO-WARNING IN / H. PHASE OUT / IRIS CONT IN
CN32 CN33 SW9 SW8 CN31 CN30 GEN-LOCK IN / AUX IN / INPUT
CN29 CN28 VIDEO 1 / VIDEO 2 / VIDEO OUT
CN27 CN26 CN25 R / B / G OUTPUT
CN23 AUTO CENTERING CONT OUT / AUTO WHITE/BLACK CONT OUT
CN15 INTERCOM LEVEL CONT OUT / GND / INTERCOM LEVEL CONT IN
CN16 GND / INTERCOM LEVEL CONT IN / INTERCOM OUT
CN17 CABLE COMP 100M IN / CABLE COMP 50M IN / CABLE COMP 20M IN / +12V OUT
CN18 +12V OUT / IRIS CONT IN / IRIS PRESET OUT / GND
CN19 +12V OUT / BAR/CAMERA CONT IN
CN20 +12V OUT / GND
CN21 +12V OUT / TALLY DRIVE OUT
SW7 AUTO CENTERING SET
SW6 AWC/ABC SET
CN36 INTERCOM
VR21 INTERCOM LEVEL
SW4 CABLE LENGTH COMPENSATION
VR22 LENS IRIS CONTROL
SW5 CAMERA/COLOR BAR SELECTION
LED BOARD
POWER TALLY
7
8
9
10
11
12

PCB3 POWER BOARD

Q58	2SD636-QRS	C8	Q70	2SD636-QRS	B8	Q82	2SD636-QRS	B10	D1	MA165	F10	IC3	YFSTK7406	C2,D2
Q59	2SD636-QRS	C8	Q71	2SD636-QRS	B8	Q85	2SC2485-QRS	C4	D2	MA165	F10	IC5	YFPC714	A2
Q60	2SD973-QRS	C8	Q72	2SD636-QRS	B8	Q86	2SD636-QRS	B5	D3	YUDXZ080	E8	IC6	STK-761	A3
Q61	2SB793-QR	C8	Q73	2SD973-QRS	B8	Q87	2SD661-TU	B5	D4	MA165	E10	D17	KBPC604	D2
Q62	2SD636-QRS	B6	Q74	2SB793-QR	B8	Q88	2SD636-QRS	B8	D5	MA165	E10	D18	YFERD28-08	C1
Q63	2SD636-QRS	B6	Q75	2SB641-QRS	D9	Q89	2SD636-QRS	C9	D6	MA165	D8	D19	YUDXZ068	A3
Q64	2SD636-QRS	B6	Q76	2SD636-QRS	D9				D7	MA165	D8	D21	YFDTA10EL	D1
Q65	2SD636-QRS	B6	Q77	2SD636-QRS	D10				D8	MA165	C8			
Q66	2SD636-QRS	B7	Q78	2SD636-QRS	D10				D9	MA165	C8			
Q67	2SD636-QRS	B7	Q79	2SD636-QRS	D10				D10	MA165	B8			
Q68	2SD636-QRS	B7	Q80	2SD636-QRS	D10				D11	MA165	B8			
Q69	2SD636-QRS	B7	Q81	2SD636-QRS	C9				D12	MA165	B10			
									D16	YUDXZ070	B5			

CONDUCTOR VIEW OF REMOTE C

CN35
CAMERA CABLE CONNECTOR

GEN-LOCK IN — CN32, SW9 75Ω, R256 75Ω, HI-Z, CN33
AUX IN — CN31, SW8 75Ω, R255 75Ω, HI-Z, CN30
OUTPUT — R CN27, G CN25, B CN26
VIDEO OUT — VIDEO 2 CN28, VIDEO 1 CN29
TALLY & INTERCOM — CN34

CN7
a VIDEO OUT 1
GND 2
GND 3
b VIDEO OUT 4

CN10
c GND 1
R OUT 2

CN11
d GND 1
B OUT 2

CN12
e GND 1
G OUT 2

CN16
f INTERCOM OUT 1
g INTERCOM LEVEL CONT IN 2
h GND 3

CN15
i INTERCOM LEVEL CONT OUT 1
j GND 2
k INTERCOM LEVEL CONT IN 3

CN21
l +12V OUT 1
m TALLY DRIVE OUT 2

CN13
n TALLY IN 1
o INTERCOM IN 2
p GND 3
q INTERCOM IN 4

CT2
R FREQUENCY RESPONSE

VR8
PAL OUTPUT GAIN

VR11
R OUTPUT GAIN

VR10
R OUTPUT GAIN PRESET

VR13
B OUTPUT GAIN

VR12
B OUTPUT GAIN PRESET

VR15
G OUTPUT GAIN

VR14
G OUTPUT GAIN PRESET

VR19
TOTAL PEDESTAL PRESET

VR16
H PHASE PRESET

VR20
TOTAL PEDESTAL

VR17
H PHASE

CT1
PAL FREQUENCY RESPONSE

VR7
PAL OUTPUT GAIN PRESET

VR23
+12V ADJ

CN22
1 +12V OUT
2 +12V CONTROL
3 +12V IN

CN2
2 PAL IN
1 GND

CN9
1 GND
2 AUX OUT

CN3
1 GND
2 R IN

VR9
AUX GAIN

CT3
B FREQUECY RESPONSE

CN8
2 AUX IN
1 GND

CN1
1 GND
2 RCU GEN-LOCK IN

CN4
1 GND
2 B IN

VR6
SYNC BALANCE

CN5
1 GND
2 G IN

CN17
4 CABLE COMP 100M IN
3 CABLE COMP 50M IN
2 CABLE COMP 20M IN
1 +12V OUT

VRI
BURST GATE

CN6
1 GND
2 RCU GEN-LOCK OUT

VR2
SC 90° PHASE

CT4
G FREQUENCY RESPONSE

SW2
SUBCARRIER PHASE COARSE SWITCH

CN24 2 GND 29 GND
CN19 1 +12V IN 2 BAR/CAMERA CONT IN
CN14 8 INTERCOM RCU CONT OUT 7 INTERCOM BAR/CAMERA CONT OUT 6 TALLY OUT 5 TOTAL PED OUT 4 GND (CAMERA) 3 AUTO-WARNING IN 2 H. PHASE OUT 1 IRIS CONT IN
CN18 1 GND 2 IRIS PRESET OUT 3 IRIS CONT IN 4 +12V OUT
CN20 1 GND 2 +12V OUT
CN23 1 AUTO CENTERING CONT OUT 2 AUTO WHITE/BLACK CONT OUT

VRI8 IRIS PRESET
VR4 SC PHASE FINE CONTROL
VR5 GEN-LOCK LEVEL
VR3 SYNC LEVEL

VR22 10K LENS IRIS CONTROL

SW7 AUTO CENTERING SET — ACC
SW6 AWC/ABC SET — ABC ABC
SW5 CAMERA/COLOR BAR SELETION — CAMERA
SW4 CABLE LENGTH COMPENSATION SWITCH — 100M 50M 20M

INTERCOM LEVEL VR21 1K
D14 TALLY LAMP
INTERCOM CN36
POWER LAMP D13
SW1 POWER SWITCH
GREEN
WHITE

2SA684-QR
2SA838-BC

2SD638-RS
2SD973-RS
2SA1254-BC
2SD636-RS
2SD661-TU
2SB793-QR

2SC2485

2SC1216-F

YFDTA10EL

MA165

YUDXZ068
YUDXZ070
YUDXZ-080

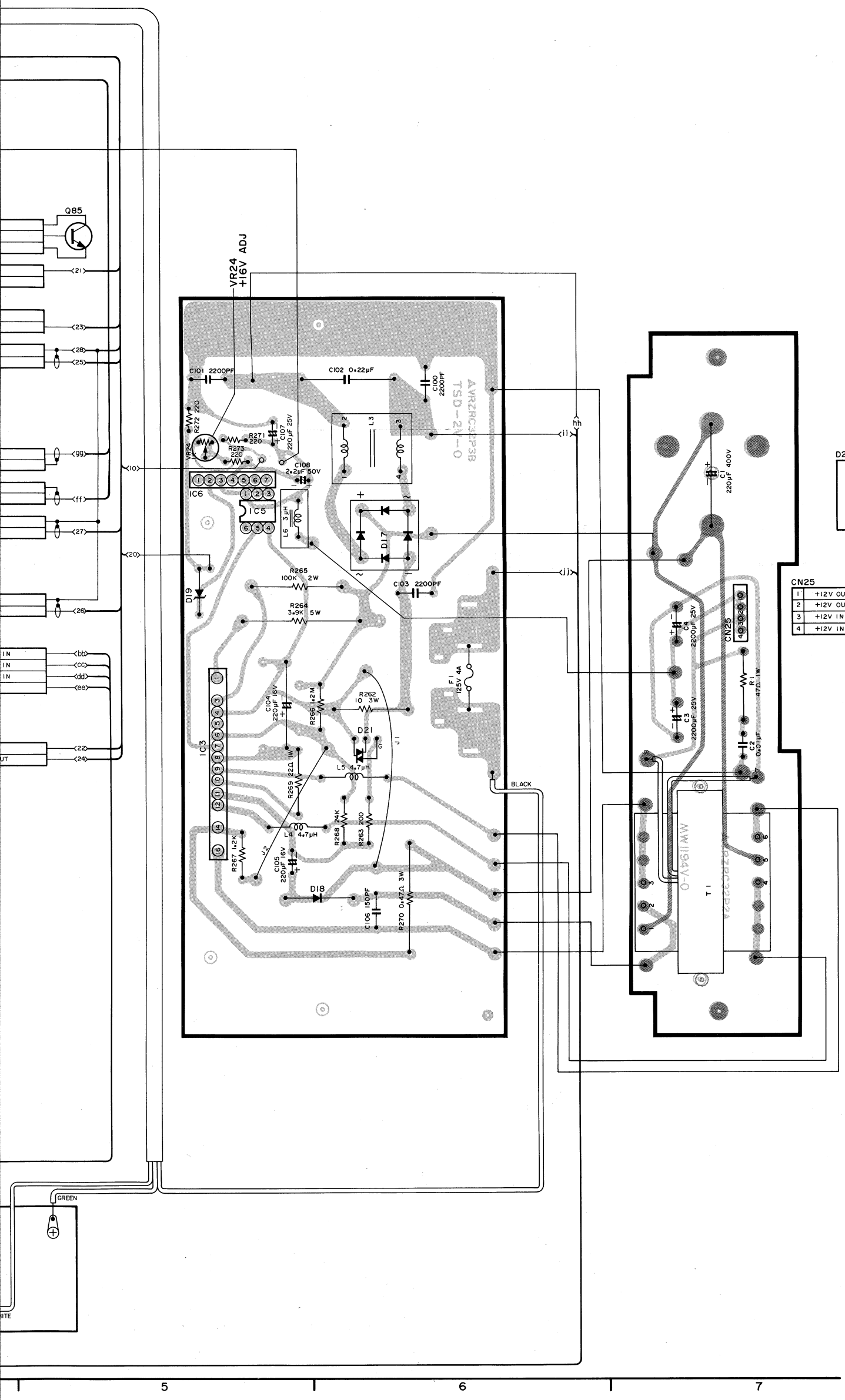
YFERD28-08

YHSNJM4558D

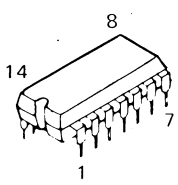
AN5750

YWHD

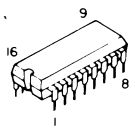
OTE CONTROL UNIT (WV-RC32)



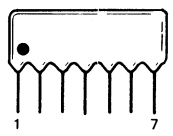
YWHD14001BP



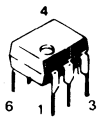
YWHD14538BP



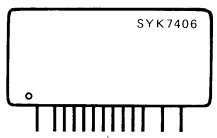
STK-761



YFPC714



YFSTK7406



PCB1 MAIN BOARD

IC1	YWHD14538BP	D4
IC2	YWHD14001BP	B3
Q1	2SD636-QRS	D4
Q2	2SA1254-BC	D4
Q3	2SD636-QRS	C4
Q4	2SD636-QRS	C4
Q5	2SD636-QRS	C4
Q6	2SD636-QRS	C4
Q7	2SC1216F	C4
Q8	2SD636-QRS	C4
Q9	2SD636-QRS	C4
Q10	2SD636-QRS	C4
Q11	2SD636-QRS	B4
Q12	2SD636-QRS	B3
Q13	2SD636-QRS	B3
Q14	2SD636-QRS	B3
Q15	2SD636-QRS	C3
Q16	2SD973-QRS	C3
Q17	2SB793-QR	B3
Q18	2SD636-QRS	D3
Q19	2SD636-QRS	D3
Q20	2SD636-QRS	D3
Q21	2SD636-QRS	D3
Q22	2SD636-QRS	D3
Q23	2SD636-QRS	D2
Q24	2SD636-QRS	D2
Q25	2SD636-QRS	D2
Q26	2SD636-QRS	D2
Q27	2SD636-QRS	D2
Q28	2SD636-QRS	D2
Q29	2SD636-QRS	D2
Q30	2SD638-QRS	D2
Q31	2SD638-QRS	D2
Q32	2SD636-QRS	D3
Q33	2SD636-QRS	D4
Q34	2SD973-QRS	D4
Q35	2SB793-QR	D4
Q36	2SD636-QRS	D3
Q37	2SD636-QRS	D3
Q38	2SD636-QRS	D3
Q39	2SD636-QRS	D2
Q40	2SD636-QRS	D2
Q41	2SD636-QRS	D2
Q42	2SD636-QRS	D2
Q43	2SD636-QRS	D2
Q44	2SD636-QRS	D2
Q45	2SD636-QRS	D2
Q46	2SD636-QRS	D2
Q47	2SD973-QRS	D2
Q48	2SB793-QR	D1
Q49	2SD636-QRS	C3
Q50	2SD636-QRS	D3
Q51	2SD636-QRS	C3
Q52	2SD636-QRS	C2
Q53	2SD636-QRS	C2
Q54	2SD636-QRS	C2
Q55	2SD636-QRS	C2
Q56	2SD636-QRS	C2
Q57	2SD636-QRS	D2
Q58	2SD636-QRS	C2
Q59	2SD636-QRS	D2
Q60	2SD973-QRS	D2
Q61	2SB793-QR	C1
Q62	2SD636-QRS	C3
Q63	2SD636-QRS	C3
Q64	2SD636-QRS	C3
Q65	2SD636-QRS	C2
Q66	2SD636-QRS	C2
Q67	2SD636-QRS	C2
Q68	2SD636-QRS	C2
Q69	2SD636-QRS	C2
Q70	2SD636-QRS	C2
Q71	2SD636-QRS	C2
Q72	2SD636-QRS	C2
Q73	2SD973-QRS	C2
Q74	2SB793-QR	C1
Q75	2SB641-QRS	C2
Q76	2SD636-QRS	C2
Q77	2SD636-QRS	C2
Q78	2SD636-QRS	C2
Q79	2SD636-QRS	C2
Q80	2SD636-QRS	C2
Q81	2SD636-QRS	C1
Q82	2SD636-QRS	B2
Q85	2SC2485-QRS	D5
Q86	2SD636-QRS	D4
Q87	2SD661-TU	D4
Q88	2SD636-QRS	C3
Q89	2SD636-QRS	B2
D1	MA165	C3
D2	MA165	C3
D3	YUDXZ080	D2
D4	MA165	D4
D5	MA165	D4
D6	MA165	D2
D7	MA165	D2
D8	MA165	C2
D9	MA165	C2
D10	MA165	C2
D11	MA165	C2
D12	MA165	B2
D16	YUDXZ070	D4

PCB3 POWER BOARD

IC3	YFSTK7406	C5
IC5	YFPC714	C5
IC6	STK-761	D5
D17	KBPC604	C6
D18	YFERD28-08	C6
D19	YUDXZ068	C5
D21	YFDTA10EL	C6

PCB501	V/F DEFLECTION BOARD
PCB502	V/F VIDEO AMPLIFIER BOARD
PCB503	LED BOARD
PCB504	CONNECTION BOARD
PCB505	POWER BOARD
V1	M13JEE5WW
D501	LN23L
VR1	EVHC0AK15B53
VR2	EVHC0AK15B15
L5	YFYS33418
SW1,2	YFM2012ESG
PL1	YWS9G1012V12
E501	YFVCN0064B
CN10	YWS7-502B-40
CN11-PF	YFVCN0064A
CN13	YWM20201A
CN1-JM	EMCS0452M
CN2-JM, 3-JM	EMCS0352M
CN4-JM	EMCS0552M
CN5-JM	EMCS0352M
CN6-JM	EMCS0452M
CN7-JM	EMCS0352M2G
CN8-JM	EMCS0252M
CN9-JM	EMCS0252M1R
M501	YFV5EA0063A3
M502	YWV3805CM01
M503	YFV5YA0013A4
M504	YFV2SA0101A4
M505	YWV3805DR01
M506	YWV3805LM02
M507	YWV930-LM01
M508	YWV385PKR01V
M509	YWV385PLR01U
M510	YWV3805AM02
M511	YFV5EA0067A2
M512	YWV3805CM02
M513	YFV5EA0064A2
M514	YFV1KA0001A4
M515	YFV5WA0060A3
M516	YFV2SA0046A4
M517	YWV3801HR01
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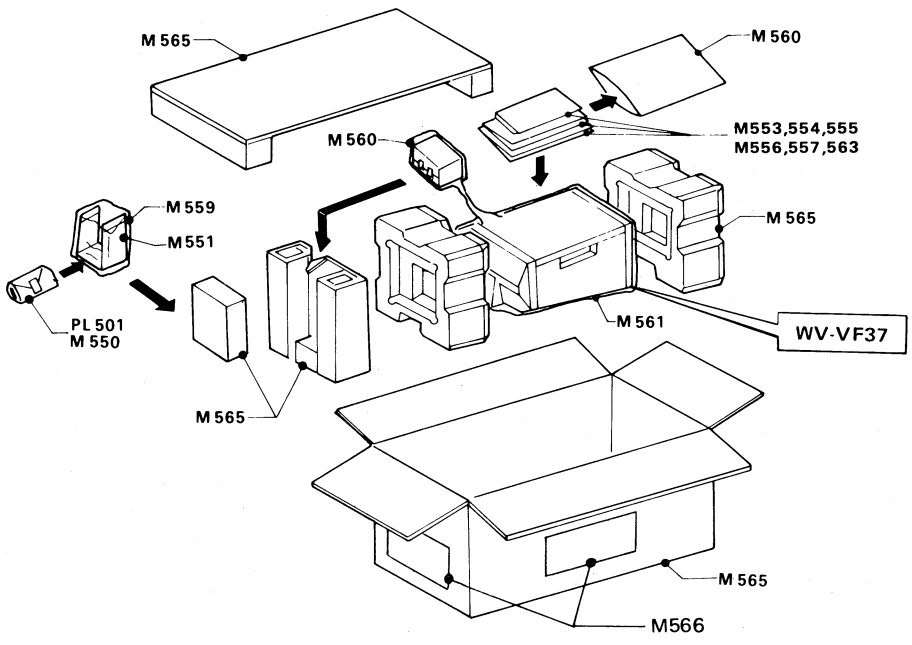
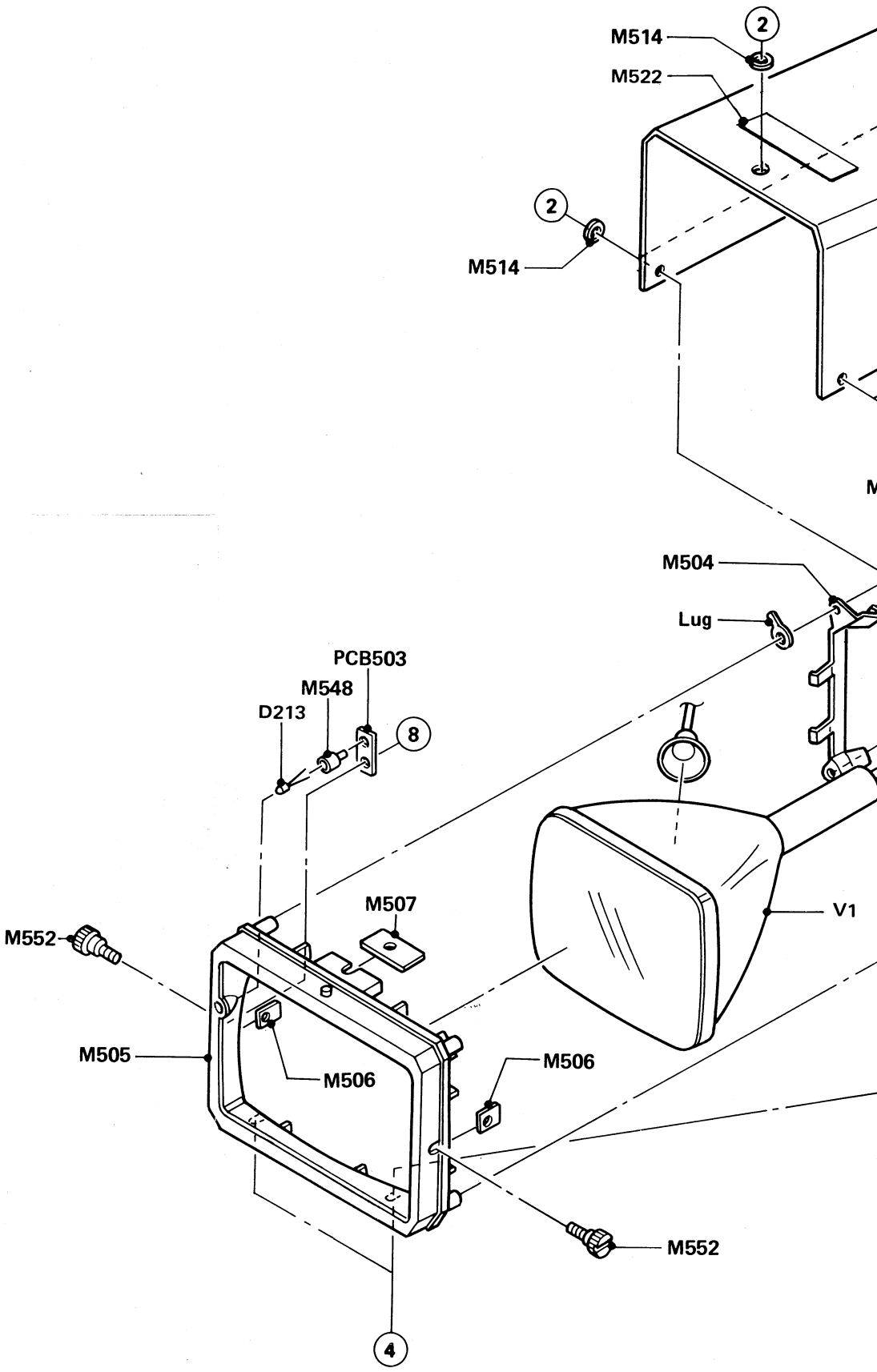
M519	YFV9QA0427A4
M520	YVZC700RB50
M522	YFV7MA0053A4
M523	YWS-LM010A
M524	YFBE-40
M525	YFV2CA0019A4
M526	YFV2NA0009A4
M527	YFV2TA0012A4
M528	YFV2NA0008A4
M529	YFV2WA0011A3
M530	YFV2WA0012A3
M531	YFV5RA0014A4
M532	YFV5RA0015A3
M533	YWV1800FR03
M534	YFV1BA0003A4
M535	YFV1BA0004A4
M536	YFV2HA0054A3
M537	YFV2HA0055A4
M538	YFV2PA0026A4
M539	YWV3805LB01
M541	YFV5EA0062A3
M542	YFV5EA0061A3
M548	YWE2400FR01
M549	YWV3505FU01

PACKAGING



PL501	YWS9G1012V12
M550	YFV5MA0011A4
M551	YFV6BA0015A3
M552	YWV3805FM01
M553	YFV8QA0418AN
M554	VQA0120-2
M555	YWV22XPRB99J
M556	YWV385PLR02U
M557	YWV385PLR03U
M558	YWT10X10C03
M559	YWT20X35C03
M560	XZB26X40C05
M561	XZB35X50C05
M562	YWT10X16C03
M563	YFV8SA0009CN
M565	YFV9CA0118AN
M566	YWS-RB033

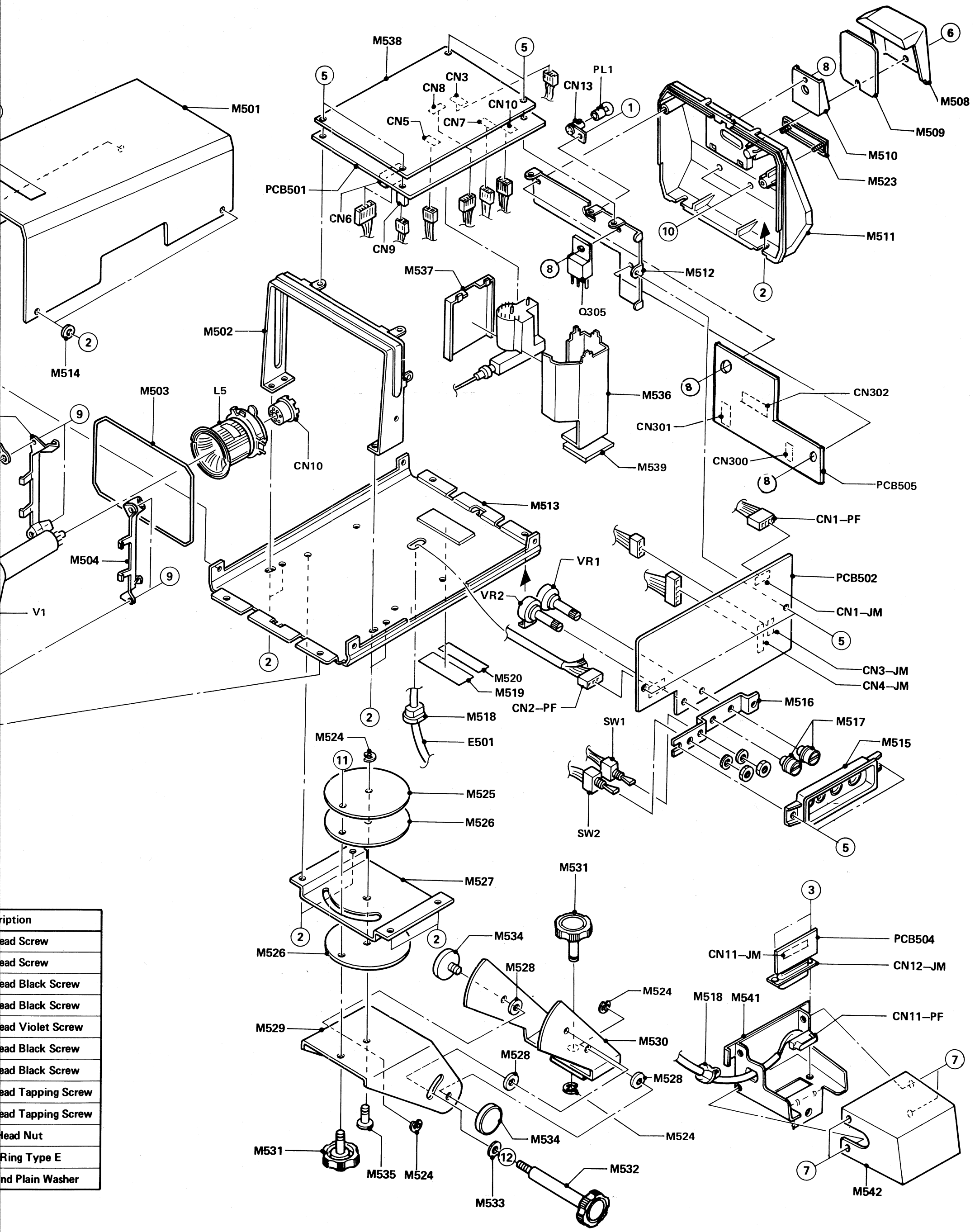
EXPLODED VIEW OF 5"



○ Numbers show Screws

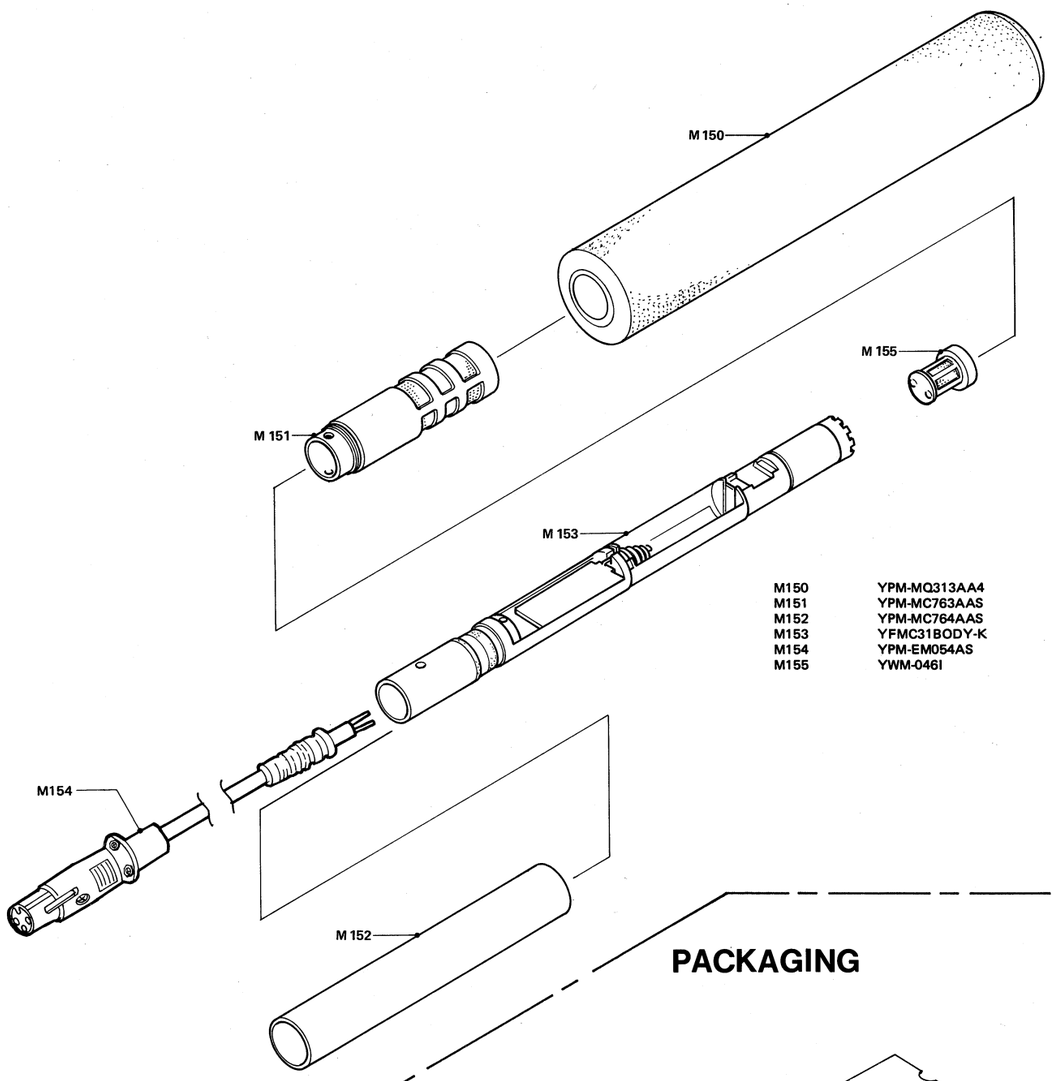
No.	Screw	Description
(1)	XSB3+6FX	Binding Head Screw
(2)	XSB3+6FXN	Binding Head Screw
(3)	XSB3+4FXK	Binding Head Black S
(4)	XSB3+6FXK	Binding Head Black S
(5)	XSB3+6FXV	Binding Head Violet S
(6)	XSB26+8FXK	Binding Head Black S
(7)	XSB26+4FXK	Binding Head Black S
(8)	XTB3+8BFX	Binding Head Tapping
(9)	XTB4+20BFX	Binding Head Tapping
(10)	XNG3GFX	Hexagon Head Nut
(11)	XUC4FN	Retaining Ring Type I
(12)	XWE6FN	Small Round Plain Wa

5″ VIEWFINDER (WV-VF37)



ription
ead Screw
ead Screw
ead Black Screw
ead Black Screw
ead Violet Screw
ead Black Screw
ead Black Screw
ead Tapping Screw
ead Tapping Screw
Head Nut
Ring Type E
nd Plain Washer

EXPLODED VIEW OF MICROPHONE (WV-MC31)



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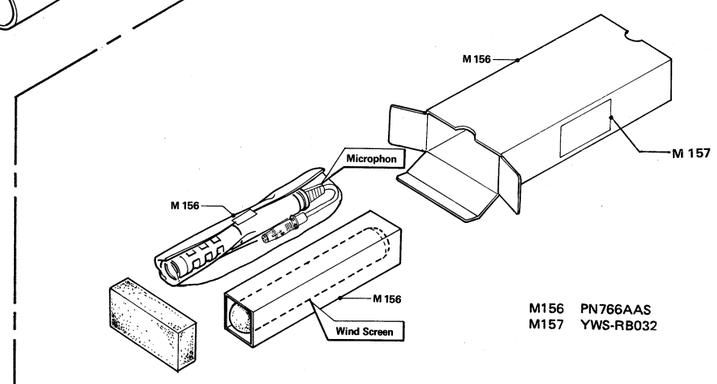


REPLACEMENT PARTS LIST

Important Notice

1. Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
2. Components identified by * mark are new parts used from this model.
3. Complete printed circuit board assembly is not available as replacement part.

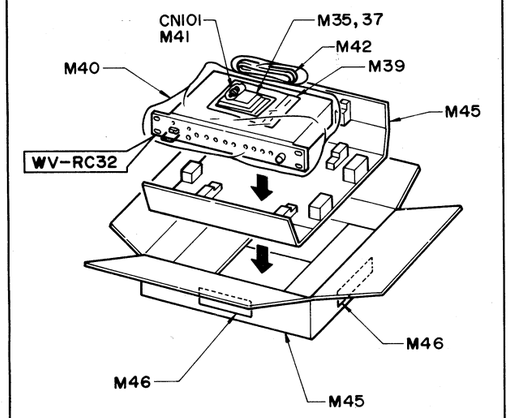
MODEL. WV-MC31, WV-VF37, WV-RC32

SYM-BOL NO.	PART NO.	DESCRIPTION
WV-MC31 MICROPHONE		
MISCELLANEOUS		
M150	YPM-MQ313AA4	Wind Screen
M151	YPM-MC763AAS	Mic Case A
M152	YPM-MC764AAS	Mic Case B
M153	YFMC31B0DY-K	Mic Assy
M154	YPM-EM054AS	Mic Cord Assy
M155	YWM-046i	Mic Unit
PACKAGING PARTS		
M156	YPM-PN766AAS	Packaging
M157	YWS-RB032	Packaging Label
IC300,301	YFM5231L	IC
WV-VF37 5" VIEWFINDER		
MISCELLANEOUS		
V1 ⚠	M13JEE5WW	Cathode Ray Tube
VR1	EVHC0AK15B53	Variable Resistor 5KΩ
VR2	EVHC0AK15B15	Variable Resistor 100KΩ
L5 ⚠	YFYS33418	Deflection Coil Ass'y
SW1, 2	YFM2012ESG	Change Over Switch for Peaking and Tally
PL1	YWS9G1012V12	Pilot Lamp
E501	YFVCN0064B	Power Cord
CN10	YWM20201A	Tally Lamp Socket
CN13	YWS7-502B-40	CRT Socket Ass'y
CN11-PF	YFVCN0064A	7 pin Connecting Wire Ass'y for CN11 and E501
CN4-PF	EMCM0513D52S	5 pin Plug Female
CN7-PF	EMCM0313DG3S	3 pin Plug Female to Deflection Board
CN8-PF	EMCM0211D55	2 pin Plug Female to Deflection Board
M501	*YFV5EA0063A3	Upper Cover
M502	YWV3805CM01	Printed Board Chassis A
M503	YFV5YA0013A4	CRT Stopper Band
M504	*YFV2SA0101A4	Mounting Bracket for CRT (X2)
M505	YWV3805DR01	Rear Escutcheon
M506	YWV3805LM02	Rear Nut Plate (X2)
M507	YWV930-LM01	Reinforce Plate
M508	YWV385PKR01V	Tally Cover
M509	YWV385PLR01U	Tally Card
M510	YWV3805AM02	Reflection Plate for Tally
M511	YFV5EA0067A2	Front Cover
M512	YWV3805CM02	Printed Board Chassis B

SYM-BOL NO.	PART NO.	DESCRIPTION
M513	YFV5EA0064A2	Lower Cover
M514	YFV1KA0001A4	Polyethylene Washer
M515	YFV5WA0060A3	Control Panel
M517	YWV3801HR01	Control Knob (X2)
M518	YWSR5N4	Cord Clamp
M519 ⚠	*YFV9QA0427A4	Main Label
M520	YVZC700RB50	Serial No. Label
M522	*YFV7MA0053A4	Caution Label
M523	YWS-LM010A	Panasonic Badge
M524	YFBE-40	Stop Ring Washer (X3)
M525	YFV2CA0019A4	Mounting Frame Push Plate
M526	YFV2NA0009A4	Mounting Frame Spacer (X2)
M527	YFV2TA0012A4	Mounting Bracket
M528	YFV2NA0008A4	Spacer for Frame (X3)
M529	*YFV2WA0011A3	Upper Mounting Frame
M530	*YFV2WA0012A3	Lower Mounting Frame
M531	YFV5RA0014A4	Knob for Pan Bracket (X2)
M532	YFV5RA0015A3	Knob for Tilt Bracket
M533	YWV1800FR03	Polyethylene Washer
M534	YFV1BA0003A4	Support for Frame (X2)
M535	YFV1BA0004A4	Support for Mount Bracket
M549	YWV3805FM01	Mounting Screw for Hood
PCB501 V/F DEFLECTION BOARD		
IC200	YHSNJM4558D	IC
IC202	AN5750	IC
Q100	2SD636-RS	Transistor
Q101	2SB641-RS	Transistor
Q102	2SD636-RS	Transistor
Q103	2SC1226-QR	Transistor
Q104	2SA684-QR	Transistor
Q200,201	2SD636-RS	Transistor
Q202	2SB641-RS	Transistor
Q203	2SD636-RS	Transistor
Q206	2SD772B	Transistor
Q207	2SD1205-R	Transistor
Q210	2SA838-BC	Transistor
D100,101	MA161	Diode
D102	MA165	Diode
D200,202	MA165	Diode
D204	MA165	Diode
D206	YUDXZ068	Diode 6.8V
D207	YUDERB24-04C	Diode

EXPLODED VIEW OF REMOTE CONTROL UNIT(WV-RC32)

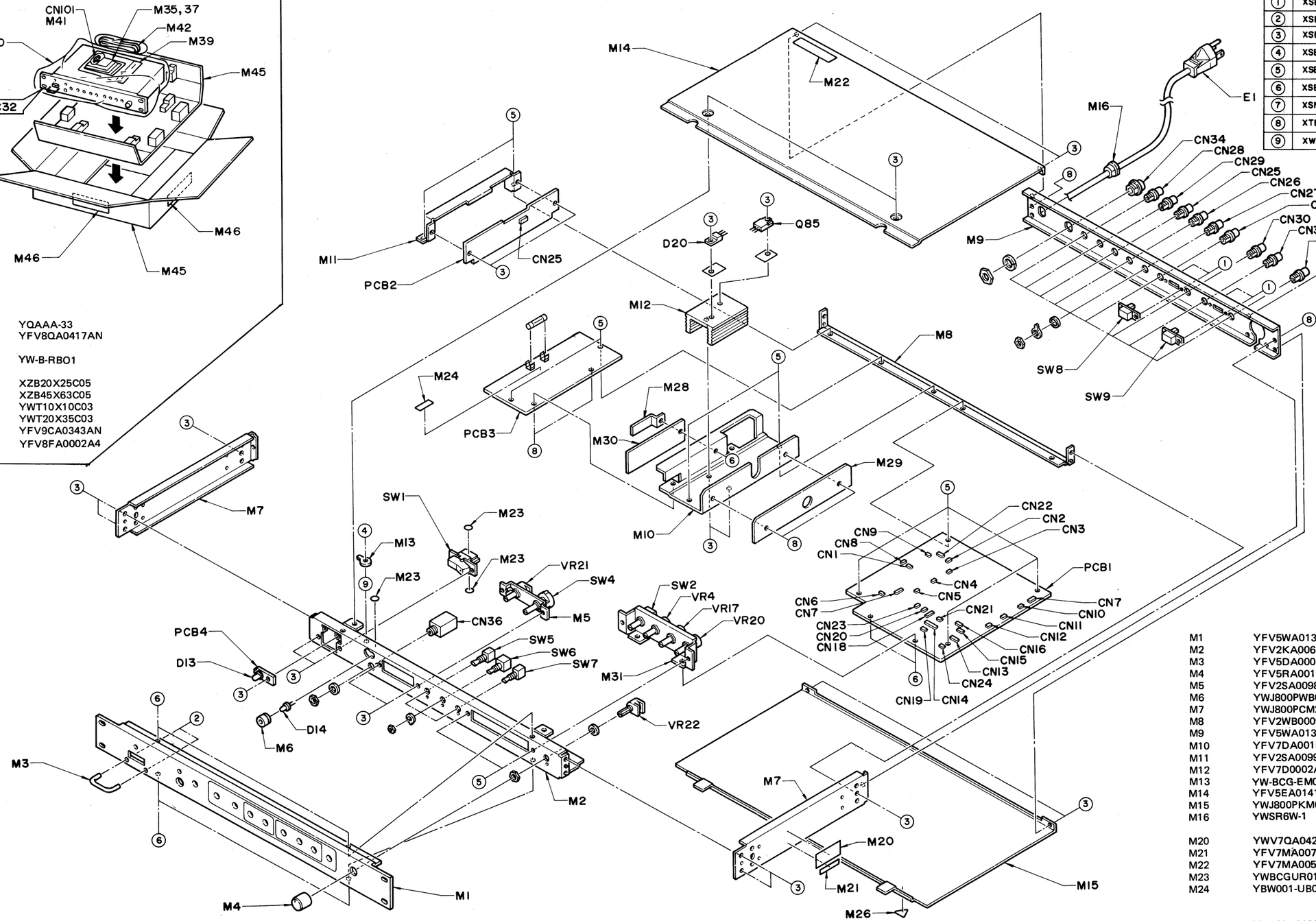
PACKAGING



CN101	YQAAA-33
M35	YFV8QA0417AN
M37	YW-B-RBO1
M39	XZB20X25C05
M40	XZB45X63C05
M41	YWT10X10C03
M42	YWT20X35C03
M45	YFV9CA0343AN
M46	YFV8FA0002A4

○Numbers Show Screws.

No.	Screws	Description
①	XSB2+4FX	Binding Head Screw
②	XSB26+6FX	Binding Head Screw
③	XSB3+6FX	Binding Head Screw
④	XSB4+6FX	Binding Head Screw
⑤	XSB3+6FXV	Binding Head Violet Screw
⑥	XSB3+6FXK	Binding Head Black Screw
⑦	XSN3+8FXK	Pan Head Machine Black Screw
⑧	XTB3+6FX	Binding Head Tapping Screw
⑨	XWC4BFN	Internal Toothed Lock Washer



PCB1	Main Board	M1	YFV5WA0132A2
PCB2	Power Sup Board	M2	YFV2KA0069A2
PCB3	Power Board	M3	YFV5DA0005A4
PCB4	LED Board	M4	YFV5RA0012A3
D13	LN21RPH	M5	YFV2SA0098A4
D14	LN31-GCP	M6	YWJ800PWB01
D20	ESABB2-004	M7	YWJ800PCM2B
R255,256	ERD25FJ750	M8	YFV2WB0009A2
VR21	EWKD0AS15B13	M9	YFV5WA0133A2
VR22	EVHC0HK20B14	M10	YFV7DA0015A3
SW1	EST1554T	M11	YFV2SA0099A4
SW3	YFM2028ES	M12	YFV7D0002A4
SW4	YFSRN1023	M13	YW-BCG-EM01
SW5	YFM2012ESG	M14	YFV5EA0141A3
SW6,7	YSTS-J0282-4	M15	YWJ800PKM01
SW8	YFM2015ESG	M16	YWSR6W-1
F1	XBA2C40ET0A		
CN25-33	YWBNC-R	M20	YWV7QA0424A4
CN34	YWAA-34	M21	YFV7MA0075A4
CN35	YFJMBP2532F	M22	YFV7MA0053A4
CN36	YWLJ194-1-1	M23	YWBCGUR01B
CN1-JM	EMCS0252M	M24	YBW001-UB03
CN2-JM	EMCS0252M		
CN3-JM	EMCS0252M	M28	YFV2SA0103A4
CN4-JM	EMCS0252M	M29	YFV2PA0055A4
CN5-JM	EMCS0252M	M30	YFV7DA0015A3
CN6-JM	EMCS0252M		
CN7-JM	EMCS0252M		
CN8-JM	EMCS0252M		
CN9-JM	EMCS0252M		
CN10-JM	EMCS0252M		
CN11-JM	EMCS0252M		
CN12-JM	EMCS0252M		
CN13-JM	EMCS0452M		
CN14-JM	EMCS0752M		
CN15-JM	EMCS0352M		
CN16-JM	EMCS0352M		
CN17-JM	EMCS0452M		
CN18-JM	EMCS0452M		
CN19-JM	EMCS0252M		
CN20-JM	EMCS0252M		
CN21-JM	EMCS0252M		
CN22-JM	EMCS0352M		
CN23-JM	EMCS0252M		
CN24-JM	EMCS0252M		
E1	YWKPJTST-3		
	YWHBS-3-08		
	YWCE099-08F		
	YWVM0099-08		

SYM-BOL NO.	PART NO.	DESCRIPTION		
D208	YUDU06C	Diode		
D209	0A91	Diode		
D210~213	YUDERB24-04C	Diode		
TH100	ERTD2FHL503S	Thermistor	50KΩ	
TH101	ERTD2FBK111S	Thermistor	110Ω	
R101	ERD10TJ103	Carbon	10KΩ	1/8W
R102	ERD10TJ222	Carbon	2.2KΩ	1/8W
R103	ERD25FJ270	Carbon	27Ω	1/4W
R104	ERX1ANJR68	Metal	0.68Ω	1W
R105	ERD10TJ621	Carbon	620Ω	1/8W
R106	ERD10TJ103	Carbon	10KΩ	1/8W
R107	ERD25FJ182	Carbon	1.8KΩ	1/4W
R108	ERD25FJ681	Carbon	680Ω	1/4W
R110	ERD25FJ222	Carbon	2.2KΩ	1/4W
R111	ERD25FJ470	Carbon	47Ω	1/4W
R112	ERD25FJ122	Carbon	1.2KΩ	1/4W
R113	ERD25FJ331	Carbon	330Ω	1/4W
R114	ERD25FJ121	Carbon	120Ω	1/4W
R115,116	ERX2ANJR56	Metal	0.56Ω	2W
R200	ERD10TJ563	Carbon	56KΩ	1/8W
R201	ERD10TJ104	Carbon	100KΩ	1/8W
R202	ERD10TJ472	Carbon	4.7KΩ	1/8W
R203	ERD10TJ103	Carbon	10KΩ	1/8W
R204	ERD10TJ132	Carbon	1.3KΩ	1/8W
R206	ERD10TJ102	Carbon	1KΩ	1/8W
R210	ERD10TJ104	Carbon	100KΩ	1/8W
R211	ERD10TJ561	Carbon	560Ω	1/8W
R212	ERD10TJ562	Carbon	5.6KΩ	1/8W
R213	ERD10TJ472	Carbon	4.7KΩ	1/8W
R221	ERD10TJ332	Carbon	3.3KΩ	1/8W
R222	ERD10TJ102	Carbon	1KΩ	1/8W
R223	ERD10TJ222	Carbon	2.2KΩ	1/8W
R224	ERD10TJ103	Carbon	10KΩ	1/8W
R225	ERD10TJ472	Carbon	4.7KΩ	1/8W
R226	ERD10TJ101	Carbon	100Ω	1/8W
R227	ERD10TJ153	Carbon	15KΩ	1/8W
R228	ERG1ANJ470	Metal	47Ω	1/8W
R229	ERX1ANJR56	Metal	0.56Ω	1W
R230	ERD10TJ561	Carbon	560Ω	1/8W
R231	ERD10TJ682	Carbon	6.8KΩ	1/8W
R232	ERD10TJ153	Carbon	15KΩ	1/8W
R233,234	ERD10TJ104	Carbon	100KΩ	1/8W
R235	ERD10TJ103	Carbon	10KΩ	1/8W
R236	ERD10TJ911	Carbon	910Ω	1/8W
R237	ERD10TJ561	Carbon	560Ω	1/8W
R238	ERD10TJ752	Carbon	7.5KΩ	1/8W
R239	ERD10TJ332	Carbon	3.3KΩ	1/8W
R243	ERD10TJ273	Carbon	27KΩ	1/8W
VR100	YFH1021A4R7K	Variable Resistor		4.7KΩ
VR102,103	YWSR19R1KB	Variable Resistor		1KΩ
VR200	YWH0651A680	Variable Resistor		680Ω
VR202	YWH0651A2R2K	Variable Resistor		2.2KΩ
VR203	YFH1621C1MB	Variable Resistor		IMΩ
VR204,205	YWH0651A10K	Variable Resistor		10KΩ
C100	ECEA1CS220	Electrolytic	22μF	16V
C101,102	ECSF16E15	Electrolytic	15μF	16V

SYM-BOL NO.	PART NO.	DESCRIPTION		
C103	ECQV05104JZ	Plastic	0.1μF	50V
C104	ECQV05274JZ	Plastic	0.27μF	50V
C105	ECQP1472JZ	Plastic	4700pF	100V
C106	ECEA1CS101	Electrolytic	100μF	16V
C107	ECEA0JSS222	Electrolytic	2200μF	6.3V
C201	ECEA1HSS3R3	Electrolytic	3.3μF	50V
C202	ECEA1HNR47S	Electrolytic	0.47μF	50V
C203,206	ECEA1CSS100	Electrolytic	10μF	16V
C207	ECSF10E2R2	Electrolytic	2.2μF	10V
C208	ECQV5273JZ	Plastic	0.027μF	50V
C212	ECEA1ASS471	Electrolytic	470μF	10V
C213	ECCF1H101JC	Seramic	100pF	50V
C214,215	ECQV05153JZ	Plastic	0.015μF	50V
C216	ECQV05273JZ	Plastic	0.027μF	50V
C217	ECEA1HS010	Electrolytic	1μF	50V
C218,219	ECQP1392JZ	Plastic	3900pF	100V
C220	ECEA1HS010	Electrolytic	1μF	50V
C221	ECEA1AS101	Electrolytic	100μF	10V
C222	ECQV05153JZ	Plastic	0.015μF	50V
C224	ECEA1CS100	Electrolytic	10μF	16V
C225	ECCF1H151JC	Ceramic	150pF	50V
C226 ⚠	ECQM2333JZ	Plastic	0.033μF	100V
C227	ECEA25W10Z	Electrolytic	10μF	25V
C228,229	ECEA2CS100	Electrolytic	10μF	160V
C230	ECEA2WS010	Electrolytic	1μF	450V
C231	ECEA2AS100	Electrolytic	10μF	100V
C232	ECEA1AS101	Electrolytic	100μF	10V
C233	ECEA1CSS100	Electrolytic	10μF	16V
C234	ECEA1ASS222	Electrolytic	2200μF	10V
C235	ECEA1AS101	Electrolytic	100μF	10V
C237	ECEA25W10	Electrolytic	10μF	100V
C238	ECEA1HSS3R3	Electrolytic	3.3μF	50V
L3 ⚠	ELH16F753	Coil		
L4 ⚠	*ELH5L18	Coil		
T200 ⚠	ETF-35L14V	Flyback Transformer		
T201	TLH3412K	Low Freq Transformer		
CN3-PF	EMCM0313D35V	3 pin Plug Female to Video Board		
CN5-JM	EMCS0352M	3 pin Jack Male		
CN6-JM	EMCS0452M	4 pin Jack Male		
CN7-JM	EMCS0352M1G	3 pin Jack Male		
CN8-JM	EMCS0252M	2 pin Jack Male		
CN9-JM	EMCS0252M1R	2 pin Jack Male		
M536	*YFV2HA0054A3	Shield Case A		
M537	YFV2HA0055A4	Shield Case B		
M538	YFV2PA0026A4	Insulator Paper		
M539	YWV3805LB01	Cushion for Shield Case		

PCB502 V/F VIDEO AMPLIFIER BOARD

IC201	TC4538BP	IC
Q1, 2	2SD636-RS	Transistor
Q3	2SB641-RS	Transistor
Q4	2SD636-RS	Transistor
Q5	2SC1216-F	Transistor
Q6	2SC2258	Transistor
Q7	2SA685	Transistor
Q8	2SB641-RS	Transistor
Q9	2SD636-RS	Transistor

MODEL. WV-MC31, WV-VF37, WV-RC32

SYM-BOL NO.	PART NO.	DESCRIPTION		
Q10	2SD661-TU	Transistor		
Q204	2SD636-RS	Transistor		
Q205	2SD661-TU	Transistor		
D1, 2	MA161	Diode		
D3	MA162	Diode		
D4	YUDERB24-04C	Diode		
D5	0A91	Diode		
D7	MA165	Diode		
R1, 2	ERD10TJ563	Carbon	56KΩ	1/8W
R3	ERD10TJ102	Carbon	1KΩ	1/8W
R4, 6	ERD10TJ222	Carbon	2.2KΩ	1/8W
R7	ERD10TJ183	Carbon	18KΩ	1/8W
R8	ERD10TJ563	Carbon	56KΩ	1/8W
R9	ERD10TJ102	Carbon	1KΩ	1/8W
R10	ERD10TJ561	Carbon	560Ω	1/8W
R11	ERD10TJ151	Carbon	150Ω	1/8W
R12	ERD10TJ152	Carbon	1.5KΩ	1/8W
R14	ERD10TJ562	Carbon	5.6KΩ	1/8W
R15	ERD10TJ103	Carbon	10KΩ	1/8W
R16	ERD10TJ331	Carbon	330Ω	1/8W
R17	ERD25FJ391	Carbon	390Ω	1/4W
R18	ERD25FJ820	Carbon	82Ω	1/4W
R19	ERD10TJ681	Carbon	680Ω	1/8W
R20	ERD10TJ472	Carbon	4.7KΩ	1/8W
R21	ERD10TJ332	Carbon	3.3KΩ	1/8W
R22	ERD10TJ822	Carbon	8.2KΩ	1/8W
R23	ERD10TJ822	Carbon	8.2KΩ	1/8W
R24	ERG2ANJ103	Metal	10KΩ	2W
R25	ERG1ANJ102	Metal	1KΩ	1W
R26	ERD10TJ104	Carbon	100KΩ	1/8W
R28	ERD10TJ273	Carbon	27KΩ	1/8W
R29	ERD25FJ473	Carbon	47KΩ	1/4W
R30	ERD25FJ333	Carbon	33KΩ	1/4W
R31	ERD10TJ391	Carbon	390Ω	1/8W
R32	ERD10TJ563	Carbon	56KΩ	1/8W
R33	ERD10TJ224	Carbon	220KΩ	1/8W
R34	ERD10TJ101	Carbon	100Ω	1/8W
R35	ERD10TJ272	Carbon	2.7KΩ	1/8W
R36	ERD10TJ332	Carbon	3.3KΩ	1/8W
R37	ERD10TJ102	Carbon	1KΩ	1/8W
R38	ERD10TJ472	Carbon	4.7KΩ	1/8W
R39	ERD10TJ272	Carbon	2.7KΩ	1/8W
R41	ERD10TJ121	Carbon	120 Ω	1/8W
R42	ERD10TJ752	Carbon	7.5KΩ	1/8W
R43	ERD10TJ103	Carbon	10KΩ	1/8W
R44	ERD10TJ301	Carbon	300Ω	1/8W
R45	ERD10TJ103	Carbon	10KΩ	1/8W
R46	ERD10TJ122	Carbon	1.2KΩ	1/8W
R214	ERD10TJ473	Carbon	47KΩ	1/8W
R215	ERD10TJ104	Carbon	100KΩ	1/8W
R216	ERD10TJ563	Carbon	56KΩ	1/8W
R217	ERD10TJ103	Carbon	10KΩ	1/8W
R218	ERD10TJ223	Carbon	22KΩ	1/8W
R219	ERD10TJ561	Carbon	560Ω	1/8W
R220	ERD10TJ103	Carbon	10KΩ	1/8W
R221	ERD10TJ153	Carbon	15KΩ	1/8W
VR3	YWSR19R680KB	Variable Resistor		680KΩ

SYM-BOL NO.	PART NO.	DESCRIPTION		
C1	ECEA1CS470	Electrolytic	47μF	16V
C2, 3	ECEA1AS101	Electrolytic	100μF	10V
C4	ECEA1CS470	Electrolytic	47μF	16V
C6	ECKF1H391KB	Ceramic	390pF	50V
C8	ECEA1AS471	Electrolytic	470μF	10V
C9	ECEA1CN100S	Electrolytic	10μF	16V
C10	ECEA1AS101	Electrolytic	100μF	10V
C11	ECQP1122JZ	Plastic	1200pF	100V
C13	ECEA1CS100	Electrolytic	10μF	16V
C14	ECEA0JS101	Electrolytic	100μF	6.3V
C16	ECEA2CS010	Electrolytic	1μF	160V
C17	ECQV05333JZ	Plastic	0.033μF	50V
C18	ECEA1HS010	Electrolytic	1μF	50V
C19	ECEA1AS101	Electrolytic	100μF	10V
C20, 21	ECQV05223JZ	Plastic	0.022μF	50V
C23	ECEA1AS221	Electrolytic	220μF	10V
C24	ECEA1HS010	Electrolytic	1μF	50V
C25	ECQV05563JZ	Plastic	0.056μF	50V
C27	ECQV05103JZ	Plastic	0.01μF	50V
C28	ECQV05104JZ	Plastic	0.1μF	50V
C29	ECEA2CS100	Electrolytic	10μF	160V
C30	ECEA1ASS102	Electrolytic	1000μF	10V
C32	ECKF1H331KB	Ceramic	330pF	50V
C33	ECEA1HSS220	Electrolytic	22μF	50V
C34	ECCF1H101JC	Ceramic	100pF	50V
C209	ECQV05223JZ	Plastic	0.022μF	50V
C210	ECQP1221JZ	Plastic	220pF	100V
L1	YFL5680J	Coil	68μH	
L2	YFL5220J	Coil	22μH	
CN1-JM	EMCS0252M	2 pin Jack Male		
CN2-JM, 3-JM	EMCS0352M	3 pin Jack Male		
CN4-JM	EMCS0552M	5 pin Jack Male		
CN5-PF	EMCM0310D35V	3 pin Plug Female to Deflection Board		
CN6-PF	EMCM0409D32Y	4 pin plug Female to Deflection Board		
M516	YF2SA0046A4	Mounting Angle for Variable Resistor		

PCB503 LED BOARD

D214	LN23L	Light Emiting Diode
CN9-PF	EMCM0220DR5	2 pin Plug Female to Deflection Board
M539	YWE2400FR01	LED Holder

PCB504 CONNECTOR BOARD

CN11-JM	EMCS0751ML	7 pin Jack Male
CN12-JM	YFDEC9PF0	9 pin Connector Socket
M518	YWSR5N4	Cord Clamp
M541	YFV5EA0062A3	Connector Cover A
M548	YFV5EA0061A3	Connector Cover B

PCB505 POWER BOARD

SYM-BOL NO.	PART NO.	DESCRIPTION	
IC300,301	YFM5231L	IC	
Q301	2SA699-QR	Transistor	
Q302	2SB793-RS	Transistor	
Q303	2SD1205-R	Transistor	
Q305	2SA1061P	Transistor	
Q306	2SB641-RS	Transistor	
D300,301	MA165	Diode	
R300	ERD10TJ331	Carbon	330 ohms 1/8W
R301	ERD10TJ104	Carbon	100K ohms 1/8W
R302	ERD10TJ103	Carbon	10K ohms 1/8W
R303	ERD10TJ561	Carbon	560 ohms 1/8W
R304	ERD10TJ752	Carbon	7.5K ohms 1/8W
R305	ERD10TJ331	Carbon	330 ohms 1/8W
R306	RED10TJ561	Carbon	560 ohms 1/8W
R308	ERD10TJ752	Carbon	7.5K ohms 1/8W
R309	ERD10TJ103	Carbon	10K ohms 1/8W
R310	ERD10TJ104	Carbon	100K ohms1/8W
R311	ERD10TJ102	Carbon	1K ohms 1/8W
R312	ERD10TJ2R2	Carbon	2.2 ohms 1/8W
VR300,301	YWSR19R3.3KB	Variable Resistor	3.3K ohms
C300	ECEA1ES101	Electrolytic	100μF 25V
C301	ECKF1H102KB	Ceramic	1000pF 50V
C302	ECEA1HS010	Electrolytic	1μF 50V
C303	ECKF1H102KB	Ceramic	1000pF 50V
C304	ECEA1HS010	Electrolytic	1μF 50V
C305	ECEA1CSS100	Electrolytic	10μF 16V
CN300	ECMS0552M	5pin Jack Male	
CN301	EMCS0452M	4pin Jack Male	
CN302	EMCS0352M	3pin Jack Male	

ACCSESSORY PARTS/PACKAGING PARTS

PL501	YWS9G1012V12	Pilot Lamp
M550	*YFV5MA0011A4	Shoe
M551	YFV6BA0015A3	Hood
M552	YWV3805FM01	Mounting Screw for Hood (X2)
M553	*YFV8QA0420AN	Operating Instruction
M556	YWV385PLR02U	Tally Card No. 1
M557	YWV385PLR03U	Tally Card No. 2
M558	YWT10X10C03	Polyethylene Bag for Screw
M559	YWT20X35C03	Polyethylene Bag for Hood
M560	XZB20X25C03	Polyethylene Bag for Connector Box and Printed Matter
M561	XZB35X50C05	Polyethylene Bag for WV-VF37
M562	YWT10X16C03	Polyethylene Bag for Tally Card
M565	*YFV9CA0118AN	Packaging Case
M566	YFV8FA0004A3	Label

WV-RC32 REMOTE CONTROL UNIT

MISCELLANEOUS

SYM-BOL NO.	PART NO.	DESCRIPTION	
D20	ESAB82-004	Diode	
D14	LN31-GCP	LED (Green)	
R255,256	ERD25FJ750	Carbon	75 ohms 1/4W
VR21	EWKD0AS15B13	Variable Resistor	1K ohms
VR22	EVHC0HK20B14	Variable Resistor	10K ohms
SW1 ⚠	EST1554	Seesaw Switch for Power	
SW3	YFM2028ES	Toggle Switch	
SW4	YFSRN1023	Rotary Switch	
SW5	YFM2012ESG	Toggle Switch	
SW6,7	YSTS-J0282-4	Slide Switch	
SW8	YFM2015ESG	Toggle Switch	
F1	XBA2C40ET0A	Current Fuse	
CN25-33	YWBNC-R	BNC Connector	
CN34	YWAA-34	4 pin Tally/Intercom Connector	
CN35	YFJMBP2532F	32 pin Camera Cable Connector	
CN36	YWLJ194-1-1	Incom Jack	
CN1-PF	EMCM0230B50	2 pin Plug Female	
CN2-PF	EMCM0225B50	2 pin Plug Female	
CN3-PF	EMCM0225B50	2 pin Plug Female	
CN4-PF	EMCM0230B50	2 pin Plug Female	
CN5-PF	EMCM0235B50	2 pin Plug Female	
CN6-PF	EMCM0240B50	2 pin Plug Female	
CN7-PF	EMCM0440B02	2 pin Plug Female	
CN8-PF	EMCM0215B50	2 pin Plug Female	
CN9-PF	EMCM0225B50	2 Pin Plug Female	
CN10-PF	EMCM0235B50	2 pin Plug Female	
CN11-PF	EMCM0240B50	2 pin Plug Female	
CN12-PF	EMCM0240B50	2 pin Plug Female	
CN13-PF	EMCM0455D55	4 pin Plug Female	
CN14-PF	EMCM0830D55	8 pin Plug Female	
CN15-PF	EMCM0345D55	3 pin Plug Female	
CN16-PF	EMCM0340D55	3 pin Plug Female	
CN17,18-PF	EMCM0425D55	4 pin Plug Female	
CN19-PF	EMCM0225D55	2 pin Plug Female	
CN20-PF	EMCM0240D55	2 pin Plug Female	
CN21-PF	EMCM0235D55	2 pin Plug Female	
CN22-PF	EMCM0330D55	3 pin Plug Female	
CN23,24-PF	EMCM0225D55	2 pin Plug Female	
CN25-PF	EMCM0420D55	4 pin Plug Female	
E1 ⚠	YWKPJTST-3	AC Power Cord for WV-RC32/A	
⚠	YWHBS-3-08	AC Power Cord for WV-RC32/B	
⚠	YWCE099-08F	AC Power Cord for WV-RC32/C	
⚠	YWVM0099—08	AC Power Cord for WV-RC32/G	
M1	*YFV5WA0132A2	Front Panel	
M2	*YFV2KA0069A2	Front Chassis	
M3	*YFV5DA0005A4	Ornament	
M4	YFV5RA0012A3	Knob	
M5	YFV2SA0098A4	Mounting Angle A for Select Switch	
M6	YWJ800PWB01	Parts Holder	
M7	YWJ800PCM02B	Side Chassis (x2)	
M8	YFV2WB0009A2	Frame	
M9	*YFV5WA0133A2	Rear Panel	
M10	YFV7DA0015A3	Mounting Angle	

MODEL. WV-MC31,WV-VF37, WV-RC32

SYM-BOL NO.		PART NO.	DESCRIPTION
M11		YFV2SA0099A4	Mounting Angle B for Power Board
M12		* YFV7D0002A4	Heat Sink
M13		YW-BCG-EM01	Earth Lug
M14		* YFV5EA0141A3	Upper Cover
M15		YWJ800PKM01	Bottom Cover
M16		YWSR6W-1	Cord Clamp
M20	⚠	* YWV7QA0424A4	Main Label
M21	⚠	YVZC700RB50	Serial No. Label
M22	⚠	YFV7MA0053A4	Safety Label
M23	⚠	YWBCGUR01B	Safety Label
M24	⚠	YFV7MA0075A4	Fuse Rated Label

PCB1 MAIN BOARD

IC1	YWHD14538BP	IC	
IC2	YWHD14001BP	IC	
Q1	2SD636-QRS	Transistor	
Q2	2SA1254-BC	Transistor	
Q3-6	2SD636-QRS	Transistor	
Q7	2SC1216F	Transistor	
Q8-15	2SD636-QRS	Transistor	
Q16	2SD973-QRS	Transistor	
Q17	2SB793-QR	Transistor	
Q18-29	2SD636-QRS	Transistor	
Q30	2SD638-QRS	Transistor	
Q31	2SD638-QRS	Transistor	
Q32,33	2SD636-QRS	Transistor	
Q34	2SD973-QRS	Transistor	
Q35	2SB793-QR	Transistor	
Q36-46	2SD636-QRS	Transistor	
Q47	2SD973-QRS	Transistor	
Q48	2SB793-QR	Transistor	
Q49-59	2SD636-QRS	Transistor	
Q60	2SD973-QRS	Transistor	
Q61	2SB793-QR	Transistor	
Q62-72	2SD636-QRS	Transistor	
Q73	2SD973-QRS	Transistor	
Q74	2SB793-QR	Transistor	
Q75	2SB641-QRS	Transistor	
Q76-82	2SD636-QRS	Transistor	
Q85	2SC2485-QRS	Transistor	
Q86	2SD636-QRS	Transistor	
Q87	2SD661-TU	Transistor	
Q88	2SD636-QRS	Transistor	
Q89	2SD636-QRS	Transistor	
D1,2	MA165	Diode	
D3	YUDXZ080	Diode	8V
D4-12	MA165	Diode	
D16	YUDXZ070	Diode	7V
R1	ERD10TJ473	Carbon	47K ohms 1/8W
R2	ERD10TJ223	Carbon	22K ohms 1/8W
R3	ERD10TJ331	Carbon	330 ohms 1/8W
R4	ERD10TJ222	Carbon	2.2K ohms 1/8W
R5	ERD10TJ563	Carbon	56K ohms 1/8W
R6	ERD10TJ224	Carbon	220K ohms 1/8W
R7	ERD10TJ472	Carbon	4.7K ohms 1/8W
R8	ERD10TJ152	Carbon	1.5K ohms 1/8W
R9	ERD10TJ392	Carbon	3.9K ohms 1/8W
R10	ERD10TJ363	Carbon	36K ohms 1/8W
R11	ERD10TJ101	Carbon	100 ohms 1/8W
R12	ERD10TJ222	Carbon	2.2K ohms 1/8W
R13	ERD10TJ151	Carbon	150 ohms 1/8W
R14	ERD10TJ102	Carbon	1K ohms 1/8W
R15	ERD10TJ331	Carbon	330 ohms 1/8W
R16	ERD10TJ682	Carbon	6.8K ohms 1/8W
R17	ERD10TJ222	Carbon	2.2K ohms 1/8W
R18	ERD10TJ471	Carbon	470 ohms 1/8W
R19,20	ERD10TJ272	Carbon	2.7K ohms 1/8W
R21	ERD10TJ103	Carbon	10K ohms 1/8W
R22	ERD10TJ822	Carbon	8.2K ohms 1/8W
R23	ERD10TJ392	Carbon	3.9K ohms 1/8W
R24	ERD10TJ561	Carbon	560 ohms 1/8W
R25	ERD10TJ101	Carbon	100 ohms 1/8W
R26	ERD10TJ561	Carbon	560 ohms 1/8W
R27	ERD10TJ152	Carbon	1.5K ohms 1/8W
R28	ERD10TJ221	Carbon	220 ohms 1/8W
R29	ERD10TJ151	Carbon	150 ohms 1/8W
R30	ERD10TJ822	Carbon	8.2K ohms 1/8W
R31	ERD10TJ392	Carbon	3.9K ohms 1/8W
R32,33	ERD10TJ561	Carbon	560 ohms 1/8W
R34	ERD10TJ271	Carbon	270 ohms 1/8W
R35	ERD10TJ152	Carbon	1.5K ohms 1/8W
R36	ERD10TJ392	Carbon	3.9K ohms 1/8W
R37	ERD10TJ822	Carbon	8.2K ohms 1/8W
R38	ERD10TJ103	Carbon	10K ohms 1/8W
R39,40	ERD10TJ561	Carbon	560 ohms 1/8W
R41	ERD10TJ181	Carbon	180 ohms 1/8W
R42	ERD10TJ152	Carbon	1.5K ohms 1/8W
R43	ERD10TJ471	Carbon	470 ohms 1/8W
R44	ERD10TJ301	Carbon	300 ohms 1/8W
R45	ERD10TJ272	Carbon	2.7K ohms 1/8W
R46	ERD10TJ152	Carbon	1.5K ohms 1/8W
R47	ERD10TJ562	Carbon	5.6K ohms 1/8W
R48	ERD10TJ100	Carbon	10 ohms 1/8W
R49	ERD10TJ392	Carbon	3.9K ohms 1/8W
R50,51	ERD10TJ222	Carbon	2.2K ohms 1/8W
R52,53	ERD10TJ2R2	Carbon	2.2 ohms 1/8W
R54	ERD10TJ223	Carbon	22K ohms 1/8W
R55	ERD10TJ750	Carbon	75 ohms 1/8W
R56	ERD10TJ562	Carbon	5.6K ohms 1/8W
R57	ERD10TJ750	Carbon	75 ohms 1/8W
R58	ERD10TJ273	Carbon	27K ohms 1/8W
R59	ERD10TJ103	Carbon	10K ohms 1/8W
R60	ERD10TJ101	Carbon	100 ohms 1/8W
R61	ERD10TJ821	Carbon	820 ohms 1/8W
R62	ERD10TJ211	Carbon	220 ohms 1/8W
R63	ERD10TJ472	Carbon	4.7K ohms 1/8W

SYM-BOL NO.	PART NO.	DESCRIPTION		SYM-BOL NO.	PART NO.	DESCRIPTION	
R64	ERD10TJ122	Carbon	1.2K ohms 1/8W	R134	ERD10TJ471	Carbon	470 ohms 1/8W
R65	ERD10TJ103	Carbon	10K ohms 1/8W	R135	ERD10TJ121	Carbon	120 ohms 1/8W
R66	ERD10TJ391	Carbon	390 ohms 1/8W	R136	ERD10TJ122	Carbon	1.2K ohms 1/8W
				R137	ERD10TJ221	Carbon	220 ohms 1/8W
R67	ERD10TJ152	Carbon	1.5K ohms 1/8W	R138	ERD10TJ272	Carbon	2.7K ohms 1/8W
R68	ERD10TJ562	Carbon	5.6K ohms 1/8W				
R69	ERD10TJ752	Carbon	7.5K ohms 1/8W	R139	ERD10TJ152	Carbon	1.5K ohms 1/8W
R70-72	ERD10TJ223	Carbon	22K ohms 1/8W	R140	ERD10TJ562	Carbon	5.6K ohms 1/8W
R73	ERD10TJ561	Carbon	560 ohms 1/8W	R141	ERD10TJ222	Carbon	2.2K ohms 1/8W
				R142	ERD10TJ100	Carbon	10 ohms 1/8W
R74	ERD10TJ621	Carbon	620 ohms 1/8W	R143	ERD10TJ392	Carbon	3.9K ohms 1/8W
R75	ERD10TJ821	Carbon	820 ohms 1/8W				
R76-78	ERD10TJ223	Carbon	22K ohms 1/8W	R144	ERD10TJ222	Carbon	2.2K ohms 1/8W
R79	ERD10TJ471	Carbon	470 ohms 1/8W	R145,146	ERD10TJ2R2	Carbon	2.2 ohms 1/8W
R80	ERD10TJ121	Carbon	120 ohms 1/8W	R147	ERD10TJ750	Carbon	75 ohms 1/8W
				R148	ERD10TJ223	Carbon	22K ohms 1/8W
R81	ERD10TJ122	Carbon	1.2K ohms 1/8W	R149	ERD10TJ750	Carbon	75 ohms 1/8W
R82	ERD10TJ273	Carbon	27K ohms 1/8W				
R83	ERD10TJ103	Carbon	10K ohms 1/8W	R150	ERD10TJ273	Carbon	27K ohms 1/8W
R84	ERD10TJ101	Carbon	100 ohms 1/8W	R151	ERD10TJ103	Carbon	10K ohms 1/8W
R85	ERD10TJ821	Carbon	820 ohms 1/8W	R152	ERD10TJ101	Carbon	100 ohms 1/8W
				R153	ERD10TJ821	Carbon	820 ohms 1/8W
R86	ERD10TJ101	Carbon	100 ohms 1/8W	R154	ERD10TJ301	Carbon	300 ohms 1/8W
R87	ERD10TJ272	Carbon	2.7K ohms 1/8W				
R88	ERD10TJ152	Carbon	1.5K ohms 1/8W	R155	ERD10TJ472	Carbon	4.7K ohms 1/8W
R89	ERD10TJ562	Carbon	5.6K ohms 1/8W	R156	ERD10TJ122	Carbon	1.2K ohms 1/8W
R90	ERD10TJ821	Carbon	820 ohms 1/8W	R157	ERD10TJ103	Carbon	10K ohms 1/8W
				R158	ERD10TJ391	Carbon	390 ohms 1/8W
R91	ERD10TJ100	Carbon	10 ohms 1/8W	R159	ERD10TJ152	Carbon	1.5K ohms 1/8W
R92	ERD10TJ182	Carbon	1.8K ohms 1/8W				
R93	ERD10TJ222	Carbon	2.2K ohms 1/8W	R160	ERD10TJ562	Carbon	5.6K ohms 1/8W
R94,95	ERD10TJ330	Carbon	33 ohms 1/8W	R161	ERD10TJ752	Carbon	7.5K ohms 1/8W
R96	ERD10TJ181	Carbon	180 ohms 1/8W	R162-164	ERD10TJ223	Carbon	22K ohms 1/8W
				R165	ERD10TJ561	Carbon	560 ohms 1/8W
R97	ERD10TJ223	Carbon	22K ohms 1/8W	R166	ERD10TJ621	Carbon	620 ohms 1/8W
R98,99	ERD10TJ750	Carbon	75 ohms 1/8W				
R100	ERD10TJ100	Carbon	10 ohms 1/8W	R167	ERD10TJ821	Carbon	820 ohms 1/8W
R101	ERD10TJ272	Carbon	2.7K ohms 1/8W	R168-170	ERD10TJ223	Carbon	22K ohms 1/8W
R102	ERD10TJ152	Carbon	1.5K ohms 1/8W	R171	ERD10TJ471	Carbon	470 ohms 1/8W
				R172	ERD10TJ121	Carbon	120 ohms 1/8W
R103	ERD10TJ562	Carbon	5.6K ohms 1/8W	R173	ERD10TJ122	Carbon	1.2K ohms 1/8W
R104	ERD10TJ222	Carbon	2.2K ohms 1/8W				
R105	ERD10TJ100	Carbon	10 ohms 1/8W	R174	ERD10TJ221	Carbon	220 ohms 1/8W
R106	ERD10TJ392	Carbon	3.9K ohms 1/8W	R175	ERD10TJ272	Carbon	2.7K ohms 1/8W
R107	ERD10TJ222	Carbon	2.2K ohms 1/8W	R176	ERD10TJ152	Carbon	1.5K ohms 1/8W
				R177	ERD10TJ562	Carbon	5.6K ohms 1/8W
R108,109	ERD10TJ2R2	Carbon	2.2 ohms 1/8W	R178	ERD10TJ222	Carbon	2.2K ohms 1/8W
R110	ERD10TJ223	Carbon	22K ohms 1/8W				
R111,112	ERD10TJ750	Carbon	75 ohms 1/8W	R179	ERD10TJ100	Carbon	10 ohms 1/8W
R113	ERD10TJ273	Carbon	27K ohms 1/8W	R180	ERD10TJ392	Carbon	3.9K ohms 1/8W
R114	ERD10TJ103	Carbon	10K ohms 1/8W	R181	ERD10TJ222	Carbon	2.2K ohms 1/8W
				R182,183	ERD10TJ2R2	Carbon	2.2 ohms 1/8W
R115	ERD10TJ101	Carbon	100 ohms 1/8W	R184	ERD10TJ223	Carbon	22K ohms 1/8W
R116	ERD10TJ821	Carbon	820 ohms 1/8W				
R117	ERD10TJ301	Carbon	300 ohms 1/8W	R185,186	ERD10TJ750	Carbon	75 ohms 1/8W
R118	ERD10TJ472	Carbon	4.7K ohms 1/8W	R187	ERD10TJ273	Carbon	27K ohms 1/8W
R119	ERD10TJ122	Carbon	1.2K ohms 1/8W	R188	ERD10TJ103	Carbon	10K ohms 1/8W
R120	ERD10TJ103	Carbon	10K ohms 1/8W	R189	ERD10TJ101	Carbon	100 ohms 1/8W
R121	ERD10TJ391	Carbon	390 ohms 1/8W	R190	ERD10TJ821	Carbon	820 ohms 1/8W
R122	ERD10TJ152	Carbon	1.5K ohms 1/8W				
R123	ERD10TJ562	Carbon	5.6K ohms 1/8W	R191	ERD10TJ301	Carbon	300 ohms 1/8W
R124	ERD10TJ752	Carbon	7.5K ohms 1/8W	R192	ERD10TJ472	Carbon	4.7K ohms 1/8W
				R193	ERD10TJ122	Carbon	1.2K ohms 1/8W
R125-127	ERD10TJ223	Carbon	22K ohms 1/8W	R194	ERD10TJ103	Carbon	10K ohms 1/8W
R128	ERD10TJ561	Carbon	560 ohms 1/8W	R195	ERD10TJ391	Carbon	390 ohms 1/8W
R129	ERD10TJ621	Carbon	620 ohms 1/8W				
R130	ERD10TJ821	Carbon	820 ohms 1/8W	R196	ERD10TJ152	Carbon	1.5K ohms 1/8W
R131-133	ERD10TJ223	Carbon	22K ohms 1/8W	R197	ERD10TJ562	Carbon	5.6K ohms 1/8W

MODEL. WV-MC31, WV-VF37, WV-RC32

SYM-BOL NO.	PART NO.	DESCRIPTION		SYM-BOL NO.	PART NO.	DESCRIPTION	
R198	ERD10TJ752	Carbon	7.5K ohms 1/8W	VR5	YWH0621A470	Variable Resistor	470 ohms
R199-201	ERD10TJ223	Carbon	22K ohms 1/8W	VR6	YWH0621A4R7K	Variable Resistor	4.7K ohms
R202	ERD10TJ561	Carbon	560 ohms 1/8W	VR7	YWH0621A1K	Variable Resistor	1K ohms
				VR8,9	YWH0621A470	Variable Resistor	470 ohms
R203	ERD10TJ621	Carbon	620 ohms 1/8W	VR10	YWH0621A1K	Variable Resistor	1K ohms
R204	ERD10TJ821	Carbon	820 ohms 1/8W	VR11	YWH0621A470	Variable Resistor	470 ohms
R205-207	ERD10TJ223	Carbon	22K ohms 1/8W	VR12	YWH0621A1K	Variable Resistor	1K ohms
R208	ERD10TJ471	Carbon	470 ohms 1/8W				
R209	ERD10TJ121	Carbon	120 ohms 1/8W	VR13	YWH0621A470	Variable Resistor	470 ohms
				VR14	YWH0621A1K	Variable Resistor	1K ohms
R210	ERD10TJ122	Carbon	1.2K ohms 1/8W	VR15	YWH0621A470	Variable Resistor	470 ohms
R211	ERD10TJ221	Carbon	220 ohms 1/8W	VR16	YWH0621A10K	Variable Resistor	10K ohms
R212	ERD10TJ272	Carbon	2.7K ohms 1/8W	VR17	EWKENAS20B53	Variable Resistor	5K ohms
R213	ERD10TJ152	Carbon	1.5K ohms 1/8W				
R214	ERD10TJ562	Carbon	5.6K ohms 1/8W	VR18	YWH0621A4R7K	Variable Resistor	4.7K ohms
				VR19	YWH0621A2R2K	Variable Resistor	2.2K ohms
R215	ERD10TJ222	Carbon	2.2K ohms 1/8W	VR20	EWGG0AS20B53	Variable Resistor	5K ohms
R216	ERD10TJ100	Carbon	10 ohms 1/8W	VR22	EVHC0HK20B14	Variable Resistor	10K ohms
R217	ERD10TJ392	Carbon	3.9K ohms 1/8W	VR23	YWH0621A1R5K	Variable Resistor	1.5K ohms
R218	ERD10TJ222	Carbon	2.2K ohms 1/8W				
R219,220	ERD10TJ2R2	Carbon	2.2 ohms 1/8W	C1	ECEA1CSS470	Electrolytic	47 µF 16V
				C2	ECEA1CSS100	Electrolytic	10 µF 16V
R221	ERD10TJ223	Carbon	22K ohms 1/8W	C3	ECQP1101JZ	Plastic	100 pF 100V
R222	ERD10TJ750	Carbon	75 ohms 1/8W	C4	ECCF1H181JC	Ceramic	180 pF 50V
R223	ERD10TJ103	Carbon	10K ohms 1/8W	C5	ECQM1H223JZ	Plastic	0.022 µF 50V
R224	ERD10TJ223	Carbon	22K ohms 1/8W				
R225	ERD10TJ562	Carbon	5.6K ohms 1/8W	C6	ECQM1H103JZ	Plastic	0.01 µF 50V
				C7	ECQP1271JZ	Plastic	270 pF 100V
R226,227	ERD10TJ103	Carbon	10K ohms 1/8W	C8,9	ECQM1H103JZ	Plastic	0.01 µF 50V
R228	ERD10TJ561	Carbon	560 ohms 1/8W	C10	ECQP1101JZ	Plastic	100 pF 100V
R229	ERD10TJ333	Carbon	33K ohms 1/8W	C11	ECQM1H103JZ	Plastic	0.01 µF 50V
R230,231	ERD10TJ472	Carbon	4.7K ohms 1/8W				
R232	ERD10TJ103	Carbon	10K ohms 1/8W	C12	ECQP1101JZ	Plastic	100 pF 100V
				C13	ECEA1CSS221	Electrolytic	220 µF 16V
R233	ERD10TJ391	Carbon	390 ohms 1/8W	C14	ECEA1ASS221	Electrolytic	220 µF 10V
R234,235	ERD10TJ331	Carbon	330 ohms 1/8W	C15	ECEA1CSS100	Electrolytic	10 µF 16V
R236	ERD10TJ271	Carbon	270 ohms 1/8W	C16	ECEA1ASS102	Electrolytic	1000 µF 10V
R237	ERD10TJ333	Carbon	33K ohms 1/8W				
R238	ERD10TJ393	Carbon	39K ohms 1/8W	C17	ECEA1CSS470	Electrolytic	47 µF 16V
				C18	ECEA0JS102	Electrolytic	1000 µF 6.3 V
R239	ERD10TJ332	Carbon	3.3K ohms 1/8W	C19	ECEA1CSS470	Electrolytic	47 µF 16V
R240,241	ERD10TJ102	Carbon	1K ohms 1/8W				
R242	ERD10TJ103	Carbon	10K ohms 1/8W	C21	ECCF1H330JC	Ceramic	33 pF 50V
R243	ERD10TJ104	Carbon	100K ohms 1/8W				
R244	ERD10TJ102	Carbon	1K ohms 1/8W	C22	ECCF1H510JC	Ceramic	51 pF 50V
				C23	ECCF1H080DC	Ceramic	8 pF 50V
R245	ERD10TJ103	Carbon	10K ohms 1/8W	C24	ECCF1H360CC	Ceramic	36pF 50V
R246-248	ERD10TJ473	Carbon	47K ohms 1/8W	C25	ECCF1H020CC	Ceramic	2 pF 50V
R249	ERD10TJ123	Carbon	12K ohms 1/8W	C26-28	ECQP1102JZ	Plastic	1000 pF 100V
R250	ERD10TJ302	Carbon	3K ohms 1/8W				
R252	ERD10TJ112	Carbon	1.1K ohms 1/8W	C29,30	ECEA1CSS470	Electrolytic	47 µF 16V
				C31	ECEA1ASS102	Electrolytic	1000 uF 10V
R253	ERD10TJ101	Carbon	100 ohms 1/8W	C32	ECEA1ASS221	Electrolytic	220 µF 10V
R254	ERD10TJ681	Carbon	680 ohms 1/8W	C33	ECCF1H390JC	Ceramic	39 pF 50V
R258	ERD10TJ152	Carbon	1.5K ohms 1/8W	C34	ECEA1CSS100	Electrolytic	10 µF 16V
R259	ERD10TJ511	Carbon	510 ohms 1/8W				
R260	ERD10TJ302	Carbon	3K ohms 1/8W	C35	ECEA1ASS102	Electrolytic	1000 µF 10V
R261	ERD10TJ682	Carbon	6.8K ohms 1/8W	C36	ECEA0JS102	Electrolytic	1000 µF 6.3 V
R262	ERD10TJ103	Carbon	10K ohms 1/8W	C37	ECEA1CSS470	Electrolytic	47 µF 16V
R274	ERD10TJ752	Carbon	7.5K ohms 1/8W				
R275	ERD10TJ103	Carbon	10K ohms 1/8W	C39	ECCF1H330JC	Ceramic	33 pF 50V
R276	ERD10TJ563	Carbon	56K ohms 1/8W				
R277	ERD10TJ302	Carbon	3K ohms 1/8W	C40	ECCF1H510JC	Ceramic	51 pF 50V
				C41	ECCF1H080DC	Ceramic	8 pF 50V
VR1	YWH0621A1K	Variable Resistor	1K ohms	C42	ECCF1H360CC	Ceramic	36pF 50V
VR2	YWH0621A1K	Variable Resistor	1K ohms	C43	ECCF1H020CC	Ceramic	2 pF 50V
VR3	YWH0621A4R7K	Variable Resistor	4.7K ohms	C44-46	ECQP1102JZ	Plastic	1000 pF 100V
VR4	EWKENAS20B13	Variable Resistor	1K ohms				

SYM-BOL NO.	PART NO.	DESCRIPTION	
C47	ECEA1CSS470	Electrolytic	47 μF 16V
C48	ECEA1ASS221	Electrolytic	220 μF 10V
C49	ECEA1CSS100	Electrolytic	10 μF 16V
C50	ECEA1ASS102	Electrolytic	1000 μF 10V
C51	ECEA0JS102	Electrolytic	1000 μF 6.3 V
C52	ECEA1CSS470	Electrolytic	47 μF 16V
C54	ECCF1H330JC	Ceramic	33 pF 50V
C55	ECCF1H510JC	Ceramic	51 pF 50V
C56	ECCF1H080DC	Ceramic	8 pF 50V
C57	ECCF1H360CC	Ceramic	36pF 50V
C58	ECCF1H020CC	Ceramic	2 pF 50V
C59-61	ECQP1102JZ	Plastic	1000 pF 100V
C62	ECEA1CSS470	Electrolytic	47 μF 16V
C63	ECEA1ASS221	Electrolytic	220μF 10V
C64	ECEA1CSS100	Electrolytic	10 μF 16V
C65	ECEA1ASS102	Electrolytic	1000 μF 10V
C66	ECEA0JS102	Electrolytic	1000 μF 6.3 V
C67	ECEA1CSS470	Electrolytic	47 μF 16V
C69	ECCF1H330JC	Ceramic	33 pF 50V
C70	ECCF1H510JC	Ceramic	51 pF 50V
C71	ECCF1H080DC	Ceramic	8 pF 50V
C72	ECCF1H360CC	Ceramic	36pF 50V
C73	ECCF1H020CC	Ceramic	2 pF 50V
C74-76	ECQP1102JZ	Plastic	1000 pF 100V
C77	ECEA1CSS470	Electrolytic	47 μF 16V
C78	ECEA1ASS221	Electrolytic	220 μF 10V
C79	ECEA1CSS100	Electrolytic	10 μF 16V
C80	ECEA1ASS102	Electrolytic	1000 μF 10V
C81	ECQP1102JZ	Plastic	1000 pF 100V
C82	ECEA1CN100S	Electrolytic	10 μF 16V
C83	ECKF1H472KB	Ceramic	4700 pF 50V
C84	ECEA1HNR47S	Electrolytic	0.47 μF 50V
C85,86	ECEA1CN100S	Electrolytic	10 μF 16V
C87,88	ECEA1HNR47S	Electrolytic	0.47 μF 50V
C89,90	ECQP1102JZ	Plastic	1000 pF 100V
C91,92	ECEA1VSS102	Electrolytic	1000 μF 35V
C93	ECEA1VSS330	Electrolytic	33 μF 35V
C95-99	ECQV1H104JZ	Plastic	0.1 μF 50V
C109,110	ECEA1CSS101	Electrolytic	100 μF 16V
CT1-4	ECRHA040E11	Trimmer Capacitor	40pF
L1	YWL5100J	Coil	10 μH
L2	YFL5470J	Coil	47 μH
SW2	YFSBU1024	Rotary Switch	
CN1-JM	EMCS0252M	2 pin Jack Male	
CN2-JM	EMCS0252M	2 pin Jack Male	
CN3-JM	EMCS0252M	2 pin Jack Male	
CN4-JM	EMCS0252M	2 pin Jack Male	
CN5-JM	EMCS0252M	2 pin Jack Male	
CN6-JM	EMCS0252M	2 pin Jack Male	
CN7-JM	EMCS0452M	4 pin Jack Male	
CN8-JM	EMCS0252M	2 pin Jack Male	
CN9-JM	EMCS0252M	2 pin Jack Male	
CN10-JM	EMCS0252M	2 pin Jack Male	

SYM-BOL NO.	PART NO.	DESCRIPTION
CN11-JM	EMCS0252M	2 pin Jack Male
CN12-JM	EMCS0252M	2 pin Jack Male
CN13-JM	EMCS0452M	4 pin Jack Male
CN14-JM	EMCS0852M	8 pin Jack Male
CN15-JM	EMCS0352M	3 pin Jack Male
CN16-JM	EMCS0352M	3 pin Jack Male
CN17-JM	EMCS0452M	4 pin Jack Male
CN18-JM	EMCS0452M	4 pin Jack Male
CN19-JM	EMCS0252M	2 pin Jack Male
CN20-JM	EMCS0252M	2 pin Jack Male
CN21-JM	EMCS0252M	2 pin Jack Male
CN22-JM	EMCS0352M	3 pin Jack Male
CN23-JM	EMCS0252M	2 pin Jack Male
CN24-JM	EMCS0252M	2 pin Jack Male
E10	YVL437TM027	Terminal
M31	YFV2SA0102A3	Mounting Angle for Phase Control

PCB2 POWER SUB BOARD

R1		ERG1SJ470	Metal	47 ohms 1W
C1	⚠	ECET2GR221BR	Electrolytic	220 μF 400V
C2		ECQM1H103JZ	Plastic	0.01 μF 50V
C3,4		ECEA1ES222	Electrolytic	2200 μF 25V
T1	⚠	YFPHE76V004	Power Transformer	
CN25-JM		EMCS0452M	4 pin Jack Male	

PCB3 POWER BOARD

IC3		YFSTK7406	IC	
IC5	⚠	YFPC714	IC	
IC6		STK-761	IC	
D17		KBPC604	Diode	
D18		YFERD28-08	Diode	
D19		YUDXZ068	Diode	6.8V
D21	⚠	YFDTA10EL	Semiconductor	
R262	⚠	ERG3SJ100H	Metal	100 ohms 3W
R263		ERD25FJ201	Carbon	200 ohms 1/4W
R264		ERG5SJ392H	Metal	3.9K ohms 5W
R265		ERG2ANJ104	Metal	100K ohms 2W
R266		ERD25FJ125	Carbon	1.2M ohms 1/4W
R267		ERD25FJ122	Carbon	1.2K ohms 1/4W
R268		ERD25FJ243	Carbon	24K ohms 1/4W
R269		ERG1ANJ220	Metal	22 ohms 1W
R270		ERF3AKR47	Wire Wound Resistor	0.47 ohms 3W
R271-273		ERD10TJ221	Carbon	220 ohms 1/8W
VR24		YWH0621A1K	Variable Resistor	1K ohms
C100,101	⚠	ECKDHS222MD	Plastic	2200 pF 400V
C102	⚠	ECQU1A224MH	Plastic	0.22 uF 125V
C103	⚠	ECKDHS222MD	Plastic	2200 pF 400V
C104		ECEB1CS221	Electrolytic	220 uF 16V
C105		ECEA1CSS221	Electrolytic	220 uF 16V
C106		ECKD3F151KBN	Plastic	150 pF 3KV

MODEL. WV-MC31, WV-VF37, WV-RC32

SYM-BOL NO.	PART NO.	DESCRIPTION	SYM-BOL NO.	PART NO.	DESCRIPTION
C107	ECEA1ESS221E	Electrolytic 220 μF 25V			
C108	ECEA1HSS2R2	Electrolytic 2.2 μF 50V			
L3 ⚠	YFUF202Y1R0	Coil			
L4,5	ELEH4R7KA	Coil 4.7μH			
L6	YFCH166	Coil			
CN37-P	YFYWV0302B	Connector			
E2	YWSN5051	Fuse Holder			
M28	YFV2SA0103A4	Mounting Angle B for IC			
M29	YFV2PA0055A4	Insulator Sheet A			
M30	YFV7DA0015A3	Insulator Sheet B for IC			
PCB4 LED BOARD					
D13	LN21RPH	LED (RED)			
ACCESSORY PARTS/PACKAGING PARTS					
CN101	YQAAA-33	4 pin Connector			
M35	* YFV8QA0417AN	Operating Instruction			
M37	YW-B-RB01	Warranty Card for WV-RC32/B			
M38	YFV8SA0009CN	Safety Guide for WV-RC32/USA			
M39	XZB20X25C05	Polyethylene Bag for Printed Matter			
M40	XZB45X63C05	Polyethylene Bag for Remote Control Unit			
M41	YWT10X10C03	Polyethyleme Bag for Connector			
M42	YWT20X35C03	Polyethylene Bag for Cord			
M45	YFV9CA0343AN	Packaging			
M46	YFV8FA0002A4	Packing Label			